

Markham's farewell to
HVSBANDRY

or,

**The enriching of all sorts of Barren and
Sterile grounds in our Kingdome, to be as
fruitfull in all manner of Graine, Pulse, and Grassie,
as the best grounds whatsoever**

**Together with the annoyances, and preservation of all
Graine and Seede, from one yeare to many yeares.**

**As also a husbandly computation of men and cattels dayly
labours, their expences, charges, and vintest profits,**

**Now newly the third time, reuised, corrected, and increased
together with many new Additions, and
cheape Experiments:**

*For the bettering of arable pasture, and woody grounds: Of making good
all grounds againe, spoiled with ouerflowing of salt waters by
sea-breachers, as also the enriching of the hep-garden,
and many other things neuer published before.*



LONDON.

**Printed by Nicholas Okes for Iohn Harrison, at the signe
of the golden Vnicorne in Parke-lane. 1631.**

of the great number of

1125B 1125A 1125Y

for file - 10-15 4

...to the ...

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as the design of the workman.

Together with the above, the following are the results of the investigation:

...and ...

about their capacity, that as well as the

Now we have the third line, which is the same as the second line, but with the first and last letters of each word reversed. This is the same as the second line, but with the first and last letters of each word reversed.


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all persons who are not members of the church

... ..
... ..

1967-1968

17



1911

1001000

John Edgar Hoover, Director, Federal Bureau of Investigation

TO THE RIGHT
VVORSHIPFULL

and his most worthy friend

Mr Bonham Norton Elquire,

Worthy Sir :



Knowledge which is the diuine mother of certaine Goodnesse, neuer came vnto welcome to a knowing Iudgement ; no more I hope shall this my labour to your worthy Selfe, since doubtlesse you shall finde in it many things New, some things necessary, and nothing which hath not in it some particular touch of profit : It is a worke your former encouragements to my other labours did create in me ; and the wants you worthily found, I hope shall bring you supplies both wholesome and becomming. The experience I assure your Goodnesse, was the expence of a bitter and tedious Winter, but the contentment (in gaining my wish) made it more pleasant then all the three other Seasons.

What that is be, it comes to you full of love, full of
 service: And since I know Verue mesures all things
 by its owne goodnesse it is enough to me, that I know
 you a verue Verue. In your power to iudge in your
 Author the same Verue Mercy, let them both stay from
 your Goodnesse with that mildnesse, that in them my
 hopes may be crowned, and my selfe rest euer at
 your seruice,

-om anind ete **CARVASE** **MAINTENANCE**
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The Preface to the Reader,

Shewing the vse, profit, and truth of the Worke.



He vse and application of this Worke (gentle Reader) is to reduce the hard, Barren and Sterile grounds, such as were neuer fruitfull, or such as haue bene fruitfull and are made barren by ill husbandry, to be generally as fruitfull as any ground whatsoever; from whence shall ensue these generall profits.

First, plenty of Corne and Pulse, because all grounds being made able and apt for tillage, the Kingdome may afforde to sowe for one bushell that is now, he easter five hundred, so mighty great are the vnfruitfull wastes of Heathes, Downes, Mores, and such like, which at this day lie vnprofitably, and to this abundance of Corne will arise an equall abundance of Grasse and Pasture, for as the best ground of the worst, is to be conuerted to Pasture, and the worst to Tillage, so that worst being tilled and drest, when it hath done bearing of Corne, (which will be in sixe or seuen yeares) shall for as many yeares more beare as good pasture either for breeding or feeding as can be required, and then being newly drest againe, shall newly flourish in its first profit.

Secondly, whereas in fruitfull places the third or fourth part of all able ground is left in the fallow or

To the Reader.

tilth ground, now in these barren grounds you shall keepe no fallow field at all, but all shall beare either Corne or Grasse, that fallow part serving to pay for the charge bestowed on it and the rest.

Lastly, whereas in fertile grounds you cannot have either Wheat, Barley, or Rye, under two, three, foure, five, and sometimes sixe severall plowings, as fallowing in *January* and *February*, Stirring in *April* and *May*, Foiling in *July* and *August*, Winter-ridging in *October* and *November*, and Sowing with other Ardors; now in these hard grounds restored you shall not plow above twice at the most, to the saving of the Husband-mans paines, his Cartels travell, and a larger limitation of time for other necessary busineses.

For the truth of the Worke he that will ride into the barren parts of *Devon-shire* or *Cornwall*, into the mountainous parts of *Wales*, into the hard parts of *Middle-sexe* or *Daiby-shire*, or into the cold parts of *Northumberland*, *Cumberland*, *Westmoreland*, *Lancashire*, or *Cheshire*, shall finde where industry is vsed, a full satisfaction for all that is here written. Farewell.

Thine, G. M.



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ADDITION.

*An excellent way to take Moles, and
to preserve good Grounds from
such annoyance.*

Put Garlike, Onions, or Leekes, into
the mouthes of the holes, and they
will come out quickly as amazed.

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Of the several sorts of the Soil. p. 135	Of the several sorts of the Soil. p. 135
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Of the several sorts of the Soil. p. 130	Of the several sorts of the Soil. p. 130
Of the several sorts of the Soil. p. 129	Of the several sorts of the Soil. p. 129
Of the several sorts of the Soil. p. 128	Of the several sorts of the Soil. p. 128
Of the several sorts of the Soil. p. 127	Of the several sorts of the Soil. p. 127
Of the several sorts of the Soil. p. 126	Of the several sorts of the Soil. p. 126
Of the several sorts of the Soil. p. 125	Of the several sorts of the Soil. p. 125
Of the several sorts of the Soil. p. 124	Of the several sorts of the Soil. p. 124
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Of the several sorts of the Soil. p. 122	Of the several sorts of the Soil. p. 122
Of the several sorts of the Soil. p. 121	Of the several sorts of the Soil. p. 121
Of the several sorts of the Soil. p. 120	Of the several sorts of the Soil. p. 120
Of the several sorts of the Soil. p. 119	Of the several sorts of the Soil. p. 119
Of the several sorts of the Soil. p. 118	Of the several sorts of the Soil. p. 118
Of the several sorts of the Soil. p. 117	Of the several sorts of the Soil. p. 117
Of the several sorts of the Soil. p. 116	Of the several sorts of the Soil. p. 116
Of the several sorts of the Soil. p. 115	Of the several sorts of the Soil. p. 115
Of the several sorts of the Soil. p. 114	Of the several sorts of the Soil. p. 114
Of the several sorts of the Soil. p. 113	Of the several sorts of the Soil. p. 113
Of the several sorts of the Soil. p. 112	Of the several sorts of the Soil. p. 112
Of the several sorts of the Soil. p. 111	Of the several sorts of the Soil. p. 111
Of the several sorts of the Soil. p. 110	Of the several sorts of the Soil. p. 110
Of the several sorts of the Soil. p. 109	Of the several sorts of the Soil. p. 109
Of the several sorts of the Soil. p. 108	Of the several sorts of the Soil. p. 108
Of the several sorts of the Soil. p. 107	Of the several sorts of the Soil. p. 107
Of the several sorts of the Soil. p. 106	Of the several sorts of the Soil. p. 106
Of the several sorts of the Soil. p. 105	Of the several sorts of the Soil. p. 105
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Of the several sorts of the Soil. p. 103	Of the several sorts of the Soil. p. 103
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Of the several sorts of the Soil. p. 100	Of the several sorts of the Soil. p. 100

ADDITION.

Will come out chiefly as annexed.
 The members of the Society, and
 Dr. Gault's Office, or for the
 to present good Grounds from
 an excellent way to the State, and
 such annexes.

AD. 1771



MARKHAM, HIS

Farewell to Husbandry.

CHAP. I.
*The nature of Grounds in generall; But particular-
 ly of the barren and sterile earth.*

COME to the full effect of my
 purpose without any preambula-
 tion, or satisfaction to the curious;
 for to the honestly virtuous are all
 mine endeavours directed: you shall
 understand that it is meet that eu-
 ery Husbandman be skilfull in the

true knowledge of the natures of
 Grounds, as which is fruitful, which not of which, in
 my first Booke I have written sufficiently; nor do I in
 this Booke intend to write any title that is in them
 contained; for as I love not *Tantalagie*, so I deadly care
 to wrong my friend.

Grounds then, as I haue formerly written in my first
 Booke, being simple or compounded; as simple Clays,
 Sands, or Grauels together, may be all good, and all fit
 to bring forth increate; or all euill and barren; and vn-
 fit for profite: for euery Earth, whether it be simple
 or compounded, whether it be of it selfe or of double

ymixture

B

mixture,

mixture, doth participate wholly with the Clyme wherein it lieth; and as that is more hot, or more cold, more moist, or more dry, so is the earth euer more or lesse fruitfull; yet for the better vnderstanding of the plaine Countrey man, you shall knowe that both the fruitfull and vnfuitfull Ground haue their seuerall faces and characters whereby they be as well knowne as by the clime or situation of the continent; for that ground which though it beare not any extraordinary abundance of grasse, yet will loade it selfe with strong and lusty weedes, as Hemlockes Dockes, Mallowes, Nettles, Kertockes, and such like, is vndoubtedly a most rich and fruitfull ground for any graine whatsoever. Also, that ground which beareth Reede, Rushes, Clouer, Daisie, and such like, is euer fruitfull in grasse and Heibage; so that small cost and lesse labour in such grounds, will ouer make good the profit of the Husbandman. But with these rich grounds at this time I haue nothing to doe.

Knowledge of
of barren
ground.

To come downe then to the barren and vnhole-
some Grounds, you shall vnderstand that they are to be knowne three seuerall wayes; first, by the Clyme and Countrey wherein they lye; next, by their constitution and condition; and lastly, by outward faces and Characters. By the Clyme and Continent, as when the ground liyes farte remote from the Sunne, or when it liyes mountainous and high, stony and rocky; or so neere vnto the skirts and borders of the Sea, that the continuall Fogges, Stormes, Mysts, and ill Vapours arising from thence, doe poyson and starue the earth: all which are most apparant signes of barrenesse. By the Constitution and Condition, as when the ground is either too extremely colde and moist, or else too violently

violently hot and dry; either of which produceth much hardnesse to bring forth, and sheweth the earth to lying, to be good for little or no profit. By the outward Faces and Characters, as when you see (instead of Grasse, which would be greene, flowry, and thicke growing) a pale thinne mossie substance cover the earth, as most commonly is vpon all high Paynes, Heathes, Downes, and such like: or when you see the ground covered with Heath, Lyng, Broome, braken, Gorse, or such like, they be most apparent signes of infinite great barrennesse, as may be seene in many Mores, Forrests, and other wild and woody places. And of these vnfertill places, you shall vnderstand that is the clay ground, which for the most part brings forth the Mosse, the Broome, the Gorse, and such like: the Sand, which bringeth forth Brakes, Lyng, Heath; and the mixt earth, which vtters Whinnes, Briars, and a world of such like vnnaturall and bastardy Issues.

Thus hauing a true knowledge of the Nature and Condition of your ground, you shall then proceede to the ordering, earing, and dressing of the same, whereby it may not onely be purged and cleared from those faults which hindred the increase thereof, but also so much bettered and refixed, that the best ground may not boast of more ample increase, nor your more fruitful placed neighbours exceede you in any thing, more then in a little case.

CHAP. 2.

Of the Ordering, Tilling, and Dressing of all sorts of
 plaine barren Clayes, whether they be simple or com-
 pounded.

THou whom it hath pleased God to place vpon a
 barren and hard soyle, whose bread must euen now
 be grounded with sweat and labour, that mayest nobly
 and victoriously boast the conquest of the Earth, ha-
 uing conquered Nature by altering Nature, and yet
 made Nature better then she was before, thou I say
 that takest thy honest delight in goodwille, hearken vn-
 to these following Precepts.

The first enri-
 ching of barren
 Grounds.

As soone as thou hast well pondered and considered
 the nature of thy ground, and dost find that it is altoge-
 ther barren and vnfruitfull, the clyme and condidon
 not suffering it to bring forth any thing of worth or
 piosse, and that thou hast well weighed what manner
 of Earth it is, as that namely it is either a simple Clay,
 or a Clay so mixt with other earths, that yet notwith-
 standing the Clay is still most predominant, thou shalt
 then select or chuse out of this earth so much as to thy
 selfe shall seeme conuenient, it being answerable to the
 strength of thy Teame, and the ability of thy purse
 and labour to compassse, and this earth so chosen out,
 thou shalt about the beginning of May, in a faire season,
 breake vp with a strong Plough, such as is generally vs-
 sed in all strong cley grounds, the Share being rather
 long then broad, and the Colture rather somewhat
 bending then streight and euen, according as the na-
 ture of the ground shall require, which every simple
 Plough-man will soone finde out in turning vp two
 or three furrowes; for according to the cutting of the
 earth

earth so must the Husbandman fashion the temper of his plough.

Now for the manner of plowing this bad and barren earth, if the ground lye free from water (which commonly all euill barren earths doe) you shall then throw downe your furrowes flat, and betwixt euery furrow you shall leaue a balke of earth halfe as broade as the furrow, and so goe ouer, and plow your whole earth vp, without making any difference or distinction of lands: but if you feare any annoyancce of water, then you shall lay your furrowes more high, neere, and close together, diuiding the ground into seuerall lands, and proportioning euery land to lye the highest in the midst, so that the water may haue a descent or passage on either side.

The manner of plowing.

Now so soone as you haue thus plowed vp your land, and turned all the swarth inward vnto the earth, you shall then take Hacks of yron, well steeled and reasonable sharpe, such a competent number, as or your purse or power can compasse, or the greatnesse of your ground requireth, for you shall vnderstand that one good hacker, being a lusty labourer, will at good ease hack or cut more then halfe an Acre of ground in a day; and with these hackes you shall hew and cut to peeces, all the earth formerly plowed vp, furrow by furrow, and not the furrowes onely, but also each seuerall balke that was left betweene, and any other Greene swarth whatsoever the plough had escaped, and it shall be cut into as small peeces as conveniently you can; for thereby is your mould made much more mellow and plentifull, and your seede at such time as it is to be cast into the earth, a great deale the better and safer couered, and much more sooner made to sproute and bring forth

Hack's Gate Ground.

increase. Now for the shape and fashion of these Hacks, you shall behold it in this Figure.



Standing of
ground.

When you have thus hacked all your ground, and broke in peeces all hard crufts and roughnesse of the swarth; you shall then immediately, with all the conuenient speed you can (because time is very precious in these labours) if you be nere vnto any part of the Seacoast, or to any other creeke or riuer, where the salt water hath a continuall recourse, thence fetch (either on horse-backe, or in cart, or other Tumbrill, such as the nature of the Country, or your owne ease can afford) great store of the salt sand, and with it couer your ground which hath bene formerly plowed and hacked, allowing vnto euery acre of ground, threescore or fourscore full bushels of sand, which is a very good and competent proportion; and this sand thus laid, shall be very well spread and mixed among the other hackt and broken earth. And herein it is to be noted, that not any other sand but the salt is good or auailable for this purpose, because it is the brine and saltnesse of the same which breedeth this fertility and fruitfulness in the earth, choaking the growth of all weeds and bad things, which would spout from the earth, and giuing strength, vigour, and comfort to all kind of graine or pulse, or any fruit of better nature.

When you haue thus sanded your earth, you shall then

then if you haue any Limestone about your grounds (as ^{Lining of} barren earth: are seldome without) or if you haue any ^{ground.} quarries of stone (which are seldome vnaccompanied with Lime-stone) gather such Lime-stone together, and make a kilne in the most conuenient place you haue, as well for the cariage of the Lime, as for the gathering together of the stone, and hauing burnt your Lime, the manner whereof is so generally well knowne through the whole Kingdome, that in this place it needeth little or no repetition; you shall then on euery Acre so formerly plowed, hackt, and sanded, bestow at least forty, or else fifty bushels of lime, spreading and mixing it exceedingly well with the other sand and earth; and herein is to be noted, that the stronger and sharper the Lime is, the better the earth will bee made thereby, and the greater increase and profit will issue from the same; neither shall you neede to respect the colour and complexion of the Lime, as whither it bee purely white (as that which is made from chalke) or gray (as that which is made from the small Limestone) or else blackish browne (as that which is made from the great stone and maine Quarry) since it is the strength and goodnesse of the Lime, not the beauty and colour which brings forth the profits.

Now that this Lime is of excellent vse and wonderfull profit, doe but behold almost all the Countreies of the Kingdome where there is any barrenesse, and you shall find and see how frequently Lime is vsed, in so much that of mine owne knowledge in some Countreies where (in times past) there was one Bushell made or vied, there is now many loades, and all risen from the profitable experience which men haue found in the same.

B. 2

Now,

Measuring of
Ground.

Now, when you haue thus limed your ground, you shall then take of the best meaneure you haue, as Oxe, Cowe, or Horle-dung, Straw rotted, either by the littering of Beastes, or by casting vpon High-wayes; the mudde of Lakes, Ponder or Ditches; the soyle of young Cattrell made in the Winter time by feeding at stand Hekes, or any such like kinde of Ordure; and this meaneure or compasse, you shall carry forth either on Horle-backe, or in Carts or Tumbrels (according as the Countrey will afford) and you shall laye it and spread it vpon your ground so formerly plowed, hackt, sanded, and lyed, in very plentifull manner, so farre forth as your prouision will extend: for it is to be vnderstood, that barren and hard earths can neuer bee ouer-laded with good meaneure or compasse, since it is onely the want of warmth and fatnesse, which meaneure breedeth, and causeth all manner of fruitfuinesse.

Times for all
labours.

After you haue thus measured all your ground, it is to be supposed that the leason of the yeare will be well shot on, for the labour of sanding will take little lesse then two monethes, your ground being of any indifferent great quantity, except you haue the assistance and helpe of many of your friendes, which is a courtesie that euery Husbandman may imbrace, but not trust vnto; for I would not wish any man that hath not Tenants to command, to presume on other friends, lest they faile him, and so his worke lye halfe done, and halfe vndone, which is a great Character of negligence and improuidence: but let euery one proportion their labours according to their owne strengths, and the number of their ordinary families. The lyming of your ground will take at least halfe so much time as the sanding,

landing; and the meanuring rather more then lesse then
 the lyming; so that by any reasonable computation of
 time, beginning to plow your ground at the beginning
 of *May*, ere it be hackt, sanded, limed, and meanu-
 red, *Michaelmas* will be come, which is the end of
September: for I allow the moneth of *May* to plowing
 and hacking; *June* and *July*, for sanding; *August* for
 lyming; and *September*, for meanuring. So then to <sup>Sec-nd plow-
ing.</sup> proceede on with our labour, at *Michaelmas*, or from
 that time to the ende of *October*, you shall beginne to
 plow ouer that ground againe which formerly you had
 p-owed, hackt, sanded, lymed and measured; and
 at this latter plowing, you shall plow the ground some-
 what deeper then you did before; and taking a good
 stich (as they call it in Husbandry) you shall be sure
 to raise vp the quicke earth, which had not bene stir-
 red vp with the plow before, making your furrowes
 greater and deeper then formerly they were, and lay-
 ing them closer and rounder together then they were
 before; and in this order or latter earing, you shall
 be carefull to plow your ground as cleane as you can,
 without balkes or other escapes in Husbandry, and
 as you thus plow your ground, you shall have cer-
 taine Hackers, with their hackes, to follow the Plow, <sup>Second hack-
ing.</sup>
 and to cut the earth and furrows into very small peeces,
 as was formerly shewed in the hacking & cutting of the
 first ardor: then so soone as your ground is thus plowed
 and hackt, you shall take a paire or two of very strong & <sup>First harrow-
ing.</sup>
 good iron harrowes, and with them you shall go ouer
 your ground, tearing that which was formerly plowed
 & hackt into more smaller peeces then before, and rai-
 sing vp the mould in much greater abundance then was
 formerly scene: which worke once finished, you shall
 then

Of sowing the
Seede.

then take your Seede which would be the finest, cleanest, and best Wheate you can provide, and after the manner of good Husbandry, you shall sowe it on the ground very plentifully, not staruing the ground for want of Seede (which were a tyrannous penury) nor yet choking it with too much (which is as lawish a foolery) but giuing it the full due, leaue it to the earth and Gods blessing.

The second
harrowing.

Now so soone as you haue thus sowed your Seede, forthwith you shall rake all the Harrows againe, harrowing the Seede into the earth, and couering it close and well with all care and diligence, and in this latter harrowing, you shall haue great respect to breake euery clot as much as you can, and so stirre vp and make as much mould as you can, and the finer such mould is made, the better it is, so it couer deepe and close, for you shall vnderstand, that all these kind of barren Clayes, are naturally tough, cold, and binding, whereby they stifle and choke any thing that growes within them; for the naturall toughnesse of the earth will not giue any thing leaue to sprout, or if it doe sprout, the binding nature thereof, so setters and locks it within the mould, that it cannot issue out, or if it do (with extreame struggling) rise through the pores of the same, yet doth the cold presently starue the root and make the steepe vtterly vnable to bring forth fruite, or any profit at all, so that except the toughnesse be conuerted to a gentle loosenesse and easie diuiding of it selfe, the coldnesse vnto warmth, and the hard binding vnto a soft liberty, there can be small hope of commodity which this manner of dressing the earth bringeth to passe; for the mixture of the sand, takes away the toughnesse; the Lime brings heate, and the meaneure comfort and liberty: as
for

Faults in the
earth.

for the hacking and cutting the earth, that is to make all the rest simbolize and mixe together: for as if any Dispensatory, make a medicine, and cast his ingredians confusedly one vpon another, without care of mixture, melting or dissolution, shall find but a corrupt, piforderly, and ill compounded receit; so he that dresseth and manureth his ground, and doth not by hacking, plowing, or some other husbandly course, mixe the earth and the compasse perfectly well together, shall seldome find profit from his seede, or finde any man of wit desirous to become his imitator. Now I must confesse, that some easie grounds of light and temperate nature, will mixe very well and sufficiently by the helpe of the Plough onely; but this barren hard earth of which I now write, must onely be broken by this violent and extreame labour, or else there will neither be mould, earth, nor any other couerture for the seed, but onely foule, great and disorderly clots and lumps, through which the graine can neuer passe, and that which lieth vnconered will be made a prey to fowle and other vermine which will hourelly destroy it.

After you haue sown and harrowed the ground, you shall then see if there remaine any clots or hard lumps of earth vnbroken, which the teeth of the Harrowes are not able to teare in peeces (as it is very likely you shall perceiue many) for these hard barren earthes which are plowed vp in their greene swarthes, are nothing neere so easily broken and brought to mould, as are the mellow soft earths which haue beene formerly plowed many times before, because the hard and intricate roots of the Grasse, Mosse, and other quicke substances growing vpon the same doth binde and hold the the mould so close and fast together, besides the natu-

Of clotting
Ground.

fall

all strength and hardnesse of the earth, that without much industrious and painefull labour, it is impossible to bring it to that finenesse of mould which Art and good Husbandry requireth, therefore, as soone as you behold those clots and lumps to lye vndisseuered and vnbroken, you shall forthwith take good strong clotting beetles, or maules made of hard and very sound wood according to this proportion of this figure.



And with these maules or clotting beetles, you shall breake all the hard clots and lumps of earth in pieces euen to so small dust, as possibly you can, because you are to presuppose, that these clots thus hard, tough, and vnwilling to be with any meanes digested into mould, are either not at all, or else very insufficiently mixed with the Sand, Lime and other meanures: and therefore you must rather breake them, that thereby they may mixe, and giue easie passage to the graine, and not like heauy poyles and dead lumps lie and presse downe the Seede so that it cannot sprout.

Another man-
ner of clotting.

But if it so fall out that partly by the hardnesse of the ill earth, partly through the season and drynesse of the yeare, that these clots and lumpes of earth will either not be broken at all, or at least so insufficiently that the mould will not be any thing neere so fine as you would haue it; you shall then hauing done your best iudicium,

let

let your ground rest till there haueaine a good ground shower or two of raine, which may wet the clots thorough and through; and then the next faire blast, you shall take your elotting beetles, but not those which you tooke before in the dry season, but some much lighter, broader and flatter, being made of thicke Ash-boords more then a foot square, and about two inches in thicknesse, according to this figure



And with these flat maules and beetles, you shall breake all the vnbroken clots and lumps of earth which shall trouble or annoy your ground, making your Lands as plaine and smooth as is possible, so that the graine may haue easie passage forth; which labour as soone as you haue finished, you shall then referre the increase and prosperity thereof vnto the mercies of God, who no doubt will giue his blessings according to thy labaur and thankfulness.

As touching the trimming and weeding of this Of weeding. Come, after it is sprung a foot above the earth, or thereabouts, you shall vnderstand, that these hard barren grounds are very seldome troubled with weeds; for weeds, especially great, strong, and offensive weeds are the issues of rich and fertile soyles; yet, if through the trimming

trimming and making of this earth (which is not commonly teene) you doe perceiue any store of thistles, or other grosser weeds to spring vp, you shall then in the moneth of *May*, with hookes, nippers, and such like tooles, cut them away or pull them vp by the rootes, which indeed is the better manner of weeding.

Severalled
seuerall yeares.

Now here is to be vnderstood, that your ground being thus dressed and trimmed as is before shewed, you may very well for the first two yeares sowe Wheate or Rye vpon it, but Wheate is the greater profit and more certaine seed; the third yeere sowing but your fold of Sheepe vpon it, that is, measuring it with your sheepe, (for it is to be intended, that in these barren earths sheepe are the greatest stocke of which the Husbandman can boast) you may very well sowe it with barley, and haue a fruitfull and plentiful crop thereon the next three yeares, you may sow it with Oates; and the seueneth yeare you may sowe it with small white Garden Peale or Beanes, according as you shall finde the strength and goodnesse of the ground, (for Beanes desire somewhat a richer soyle then the Peale) then for three or foure yeares following the seuen, you may let it lie at rest for grasse, and doubtlesse it will yeeld you either as good pasture, or as good Medow as you can reasonably require. And then after the expence of this time, it shall bee good that you dresse and order your ground againe in such sort as was formerly declared; and thus you may euery yeare dresse one or other piece of ground, till you haue gone ouer all your ground, or at least as much as you shall thinke expedient; and without faile, he that is Master of the most fruitfulllest and richest soyle, shall not beaue of any greater increase then you shall, onely your charge
may

may be a little more, and so shall be also your commodity, which shall make an amends for your charge; as for your toyles, yours shall be much the lesse, by a iust computation; for though you haue many labours, yet they are but Summer labours, and neither hurt your owne body, nor your Cattell: whereas the Master of the rich soile is in continuall worke both Winter and Summer, labouring twice so much to confound the superfluous growth of weeds as you doe to beget the increase of Corne, and whereas he must euer keepe a third or fourth part of his Corne-ground without fruit, you shall not keepe any which shall not yeeld you a sufficient commodity.

Now me thinkes I heare in this place, to be objected vnto me, that whereas I doe prescribe the sanding of these barren Earths with the salt Sea-sand, and no other (as it is true, for all other fresh sand is vnauaileable) what if the ground doe lie so farre within the Land, that there is no salt sand within many score miles of it, how then shall I make good my barren earth; sure to fetch sand so farre, will neuer equall the cost, or it may be this experience hath no further limits then to such hard and barren earths as lye alongst the Sea-coast onely.

To this I answere, that al be this salt Sea-sand be of infinite good and necessarie vse, enriching grounds wonderfully much, yet is not this experience of bettering of barren soiles, so strictly bound thereunto, but that without any vse of the same, you may make your earth as fruitfull in Corne or Grasse, as hath beene already formerly declared.

Therefore if your ground lye much within the Land, and farre from the Sea, so that this commodity

Ordering
Earth where
seeds wanteth.

Sowing of
Salt.

The excellen-
cy of Salt.

of land is not by any possible means to be gotten, then you shall (having first lookt into the nature of your ground, and finding it to be by all characters and faces a cold, barren, stiffe, dry Clay, yeelding nothing but a short moilie grasse, without any other burthen at all as is seene vpon most Plaines, and Downes of this Kingdome) first plow it and hacke it as was before shewed in the former part of this Chapter, then in stead of landing it, you shall lime it as before said, or rather a little more plentifully, then you shall measure it, after (as at seede time) you shall plow it and hacke it againe, then harrow it as before said; then to every aker of ground, you shall take two bushels of very dry Bay salt, and in such manner as you sowe your Wheate, you shall sowe this salt vpon the ground, then immediately after the sowing of the salt, you shall sowe your Wheat, which Wheate would be thus prepared before you sow it; the day before you are to sowe your graine, you shall take Bay salt and water, and mixing them together make a brine so strong that it will beare an egge, then put the Wheate you are to sowe into that brine, and let it steepe therein till the next day, then draine it as cleane as may bee from the brine, and so sow it, harrow it, cloe it, and weede it, as was before declared, and no doubt but you shall finde a maruailous great increase thereby: for this I can assure you, both from a most certaine knowledge, and a most worthy relation, that a Gentleman buying some store of seed Wheate, and infort to bring it home by Sea, by some casuall meanes loste of the sacks at the vnlading, fell into the Sea, and were much drencht in the salt water, whereat the Gentleman being grieued (as doubting some harm to come to the seed) yet infort of necessity

to make vse thereof, caused all the Wheat which was so wet to be sown by it selfe in a particular place, and vpon the worst ground which he had, (as much despairing in the increase thereof) and it is most infallibly true, that of that wet Seed, he receiued at least fise-fold more profit then of any other, and from thence it came, that this experiment of Brine and the sowing of salt hath taken place; from which the painfull husbandman hath found such infinite increase to arise, that the vse thereof will neuer be layed downe in this Kingdome, neither is the thing in it selfe, without good and strong probability of much increase and strength for the bettering of all manner of carable grounds; for there is nothing which killeth weedes, quicks, and other offences of the ground so much as saltnesse: for what makes your Pigeons dung and your Pullens dung to be better for carable grounds then any other dung or manure whatsoever, but by reason of the saltinnes thereof, by which saltinnes also, you may iudge the strength and heat thereof, inso much that the proper taste of fire, or any hot thing is euer salt; also we say in Philosophy, that blood which carrieth the vitall heat and warmth of the body, is in taste salt, and so a nourisher, maintainer, and increaser of all the strength and vigour of the inward faculties: whereas Phlegme, Choller, and Melancholly which are the hurts and confounders of the vitall spirits; the first is in taste sweete; the second bitter, and the last of an earthy and dry taste, full of much toxticomenesse.

Now againe you shall vnderstand, that as you thus wet or soepe your Wheat seede, so you may also soepe any other seede, as Barley, Oare, Beanes, Pease, Lupins, and

Cf sleeping
Seed in brine.

Fetches, and such like, of which, your Beanes, Peases, and Lupins, you may steepe more then any of the rest, and your Oates the least.

As touching Rye, it shall be good not to steepe it all, for it is a great enemy to all manner of wet and moysture, in so-much, that the curious Husband-man will forbear to sow it in any great shower of raine, bearing in his minde this aunient addage or saying, that *Rye will drown in the Hopper*: as on the contrary part, *Wheate would be sown so moyst, that it might sticke to the Hopper*: yet notwithstanding, when you doe sowe Rye in any of these low-land and cold barren Countries, where sand is not to bee gotten, you shall not by any meanes omit the sowing of your salt before, for it is nothing neere so moyst as it is warme and comfortable.

CHAP. 3.

Of the ordering, Tylling and Dressing of all rough Barren Clayes, whether simple or compound, being laden and over-runne with Gorse, Braome, and such like.

NEXT vnto these plaine barren earths, which by reason of their heights, are subiect in the Winter time to all manner of cold, frosts, stormes, tempests, blasts, and winds, which are the perfect hinderers of all increase and growth, and in the Sommer time to all hot scorplings, scallings, and fiery reflections of the Sunne, which on the contrary part, burneth and withereth away, that little seemeth increate which appeareth about the earth: I will place that barren clay, whether it be mixt or vnmixt, which lying not so high, and being subiect vnto these hurts and offences, seemeth to be

be a litle more fruitfull, yet either by the extreame cold moysture thereof, or the stony hardnesse, and other malignant qualities, is no lesse barren then that of which I haue formerly written, which indeede is that barren and vilde soyle, which will neither beare corne nor grasse, but is onely ouer-run and quite couered ouer with great, thicke, and tall bushes of Gorse or Furr, which is a most sharpe, woody, and grosse weed, so full of prickes, that neither Horie, Beast, Sheepe, nor Goates dare thrust their noses to the ground to gather vp that litle poore grasse which groweth thereon: And al-be these Gorse, or Furr, are one way a litle commodity to the needfull Husband-man, in being a reasonable good fuell, either for baking, brewing, or diuerse other suddaine and necessary vles; yet, in as much as the profit being compared with the great quantity of earth which they couer and destroy, and which with good Husbandry might be brought to great fruitfulness, is indeede no profit at all; it shall not be amisse for euery good Husband-man that is pestered and ouer laden with such ground, to seeke by way of good Husbandry how to reduce and bring it to that perfection and excellencie which may be best for his owne particular commodity, and the generall good of the Kingdome wherein he liueth.

Then is there another kind of soyle which is nothing at all differing from this, but is euery way as barren and sterile, which is that ground which is ouer-runne with broome (which is as noysome a weed as the former) and though it haue not such sharp prickles as the other, whereby to hinder the grazing of Cattel; yet doth it growe so close and thicke together, and is naturally so poysonous and offensiuē to grasse, that you shall sel-

come see any grow where this Broome prospereth; besides the bitternesse thereof is so vnplesant and distastfull to all kind of cattell, that not any will euer crop or bite vpon the same, onely it is of some necessary vse for the poore husbandman, in respect that it serueth him both for fuel, for tharching and the couering of his houses, (being for that purpose, of all, the longest lasting) and also for the making of Besoms for cleansing of the house and barnes, or else for sale and commodity in the market; all which profits (as before I said) being compared with the losse of the ground, and the goodnesse that might be reaped from the same, are indeed truly no profits but hinderances.

Destroying
of weeds.

Therefore I would with euery man that is Master of such grounds, whether they be overrunne with Gorse, Furres, Broome, or any such kind of grosse, woody, or substantiall weede: first, to cut vp the weed (of what sort soeuer it be) whether Gorse, Furres, or Broome) as close and neere vnto the ground as you can possibly, and then making vp them into heapes or bigge faggots, carry them home and sticke them vp very dry, so as no raine may enter or pierce into them, for the same left wet will rot and consume them to dirt and filth: else, which done, you shall make Labourers with hacks, picks, and such like tooles, to stubbe vp all the rootes which you left in the ground, euen to the very bottomie of the same; and these rootes you shall be very carefull to haue stubbed vp exceeding cleane, by no meanes leauing (so neere as you can) any part or parcell of the rootes behinde you, then those rootes thus stubbed vp, you shall diligently gather together into little heapes as bigge as Moale-hilles,

hilles, and place them vpon the ground a pretty distance one from another, and so let them lye till the Sunne and winde haue dried them: for it is to be intended, that this labour must begin about the latter end of *Aprill*, and beginning of *May*.

Then so soone as you find these rootes are thorowly dried, you shall pile them handsomely together, laying them a little hollow one from another, and then with a hacke cut vp some of the same earth, and therewithall couer all the rootes quite ouer, onely leauing a vent hole at the top, and on one side, and so let the hills rest two or three dayes, till the earth bee a little parcht and dried, then take fire and some other light dry fuell which is aptest to blaze, and with the same kindle euery hill, not leauing them till you see them perfectly on fire: which done, let them burne both day and night, till the substance being wholly consumed, the fire go out of it owne seife, and this in some Countries is called the *Burning of Baite*.

Burning of
baite.

Now as soone as the fire hath beene extinguished for two or three dayes, you shall then come, and with shouels (and beetles to breake the hard burnt earth in peeces) you shall spread all the ashes cleane ouer the ground; which done, you shall with a very long plow teare vp the earth into great and deepe furrowes, and diuide it into Lands, as you shall thinke meete and conuenient, laying them higher, or flatter, as you shall haue occasion, and as the ground lyeth more or lesse within the daunger of water, whether it be the ouer flowing of some neere neighbouring Brookes or Riuers, or else other standing Water occasioned by Raine and extraordinary Showers, which must be carefully lookt vnto, because all ouer-floues and inundati-

Breaking of
the burnt earth

Causes of vn-
seasonable.

Causes of vn-
fruitfulnesse.

An excellent
measure.

Of plowing.

Of sowers?
measure.

on of water, is a mighty destroyer and consumer of graine: but these barren grounds of which I now write, are very seldome oppress'd with water; for most commonly they lie so high, that the continuall drynesse thereof, is a strong occasion of the much vnfruitfulnesse. After you haue thus burnt your baite, and plowed vp your ground, you shall then with your hakes hacke it into small pieces, in such manner as was declared in the former Chapter; then you shall (if the Sea be any thing neere you) sand it with salt sand (as before said) then lime it, and after, measure it either with Oxē dung, Horle dung, rotten Straw, mudde of Ponds and Ditches, the spiteling of House floures, or sweepings of Channells and Streets, or such like, or for want of all these in case you dwell neere vnto the Sea-coast (where measure for the most part is in greatest scarcity, and the hardest to be come by) you shall gather from the bottome of the rockes (where the scydge of the Sea continually beareth) a certaine blacke weede, which they call Hempe-weede, hauing great broad leaues, and growing in great abundance, in thicke tufts, and hanging together like Pease straw; and with these weeds, you shall couer your lands all ouer of a pretty good thickeesse, and then forthwith you shall plow it againe somewhat deeper, and with somewhat greater furrowes then before, raising vp the new quicke earth to intermingle and mixe with those measures and helps which you had formerly prepared and laid vpon the ground; then shall you againe hacke it and harrow it; then shall you take Pigeons dung, or Pullens dung (that is, any kind of land fowle whatsoever, but by no meares any water-fowle) or Pigeons dung and Pullens dung mixt together, and allowing

lowing to euery aker two or thrce bushels thereof, which is the true quantiry of seede proportioned for the some, and this dung being broken and masht into small peeces, you shall put into your Sydlop or Hopper, and in the same manner as you sow your corne, you shall sowe this dung vpon the ground, and then immediatly after it, you shall sowe your Wheate either steept in brine, or else salt Sea-water, or vnsteept, as you sh all thinke good, but in case you can neither get salt sand nor Sea-Rocke weedes, then you shall by no meanes omit the steeping of your Seede; neither shall you faile before you sowe your Seede, to mixe with your Pigeons, ^{Mixture of} and Pullens dung, a full equall part of Bay-salt well ^{scabures,} dried and broke, and so sower with the dung vpon the land, and then the seede after it; which done, you shall harrow it againe, clor it, sleight it, and smoth it, in such sort as was formerly declared in the former Chapter, for these labours haue no alterations, but must in all points bee done as was before set downe.

Now touching the weeding of this earth, after the ^{Of weeding.} Corne beginneth to grow aboue the ground, there is no feare to be had either of Thistles, Tares, Cockles, Darnell, Dockes, and such like strong weedes, which indeed are the issues of good grounds ill ordered and handled: but the weeds which you shall most feare in this place, is young Gorse, or Furs, or else young Broome, which are very apt to grow from the least part or parcel of roots that shall be left behind; nay the very nature of those barren earths is such, that of its owne accord it will bring forth those weedes, the cold sharpnesse of the ayre mixing with the sterility and roughnesse of the earth, being the cause that it will giue

life to no other better plants; therefore so soone as you shall behold any of them to appeare aboue the earth, though they be not halfe a finger high, you shall presently with all diligence, pull them vp by the roots and cast them away, or lay them in heapes that they may be afterwards burnt, and the ashes sprinkled vpon the ground: and herein is to be obserued, that the younger and the sooner that you do pull vp these weeds, the better it is, and the easilier they will come from the earth, and the sooner be destroyed: for all those mixtures wherewith already you haue beene taught to mixe your earth, are in themselves such naturall enemies to all these kind of barren weeds, that should you omit the manuell labour of destroying them (which no good husband willingly will do) yet in time the earth of it selfe, and the often plowing of the same would leaue no such offence of weeds or other growths which might hinder the Corne.

Time for
weeding.

Now touching the best time when to pull away these weeds, though generally it must be done as soone as they do appeare aboue the ground; yet it shall not be amisse for you to deferre the worke till after a shower of raine, and then immediately after the ground is wet (and so by that meanes more apt and willing to open and forsake the roots fastned within it) you shall with all diligence pull them out of the ground, and destroy them: neither shall you pull them out of the ground with your hands onely, for the Corse haue exceeding sharpe pricks, so that with your naked hands you are not able to touch them, and to arme your hands, against them, with strong thicke gloues, would be to boistrous and combersome, so that sometimes you might either misse the weedes, and pull vp the
Corne;

Corne ; or else pull vp the Corne and weeds both together ; therefore to preuent all these casualties or hinderances, you shall take a paire of long small wooden Nippers, made after the forme of this figure.



And with these you shall pull the weeds out of the ground, and cast them into the furrowes by the sides of the Lands, till your daies worke be finished, and then with a rake you shall rake them together, and so lay them in heapes, to dry and wither, in more conuenient places, that when time shall serue, you may burne them, and vse them, as was before declared.

Lastly you shall haue great respect, that if this ground be very much troubled with loose stones, as flint, pibble, and such like, that then you very carefully get them gathered from the ground, both before and after you haue plowed it, and to lay them on heapes in other vacant places, where they may serue for pavings, and such like purposes when time requireth : but if the ground be ouer-run with great or else small lime-stones, as for the most part these barren grounds are ; then shall you with all care gather them vp, and lay them in great heapes in some corner of your field where you may make a conuenient lime kilne, and so there burne these stones thus gathered, which will be both an infinit profit, and an infinit ease to the rest of your labours.

Gathering
of stones.

CHAP. 4.

Of the Ordering, Tilling, and dressing of all rough barren Claves, whether simple or compound, that are over-runne with Whinnes, and such like.

NExt vnto this barren Clave which is over-runne with Furres, Broome, and such like, I will place that barren and unfertile earth, being also a Clave, whither simple or compound, which is over-runne onely with Whinnes, and indeede bearing little or no other burthen, or if it doe beare any other burthen, as some little short mossie grasse, yet is that grasse so covered over with these sharpe Whinnes, that not any beast dare put his nose to the ground, or bite vpon the same; and indeede, this kinde of earth is not any whit at all lesse barren then those of which I have already written: but rather more, in that the malignant qualities thereof are not so soone corrected, nor yet the vertues so soone restored.

What whinnes
are.

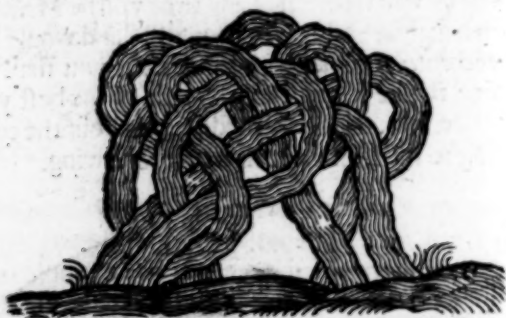
Whinnes are a certaine kinde of rough dry weedes, which growe bushie and thicke together, very short, and close vnto the ground, being of a darke browne colour, and of crooked growth, thicke and confused, and full of knots, and those knots armed with hard, long, sharpe prickes, like thornes or bryars, they haue littl browne leaues which shaddow the prickes, and doe winde their branches so one into another, that they can hardly be separated, yet is their growth at any time little more then a handfull about the earth, or ely they spread exceedingly, and will runne and couer over a whole field, choaking vp all sorts of good plants whatsoever,

foeuer, and turning the best grasse that is to mosse, and filthinesse, wherfore if at any time you be Maister of any such naughtie and barren ground, and would haue it reduced vnto goodnesse and fertility, you shall first take a fine thinne paring-shouell made of the best yron, and well steeled, and hardened round about the edges, according to the forme of this figure following.



And with this paring-shouell, you shall first pare vp all the vpper swarth of the ground, about two inches, or an inch and a halfe thicke at the least, and e-very paring would be some three foote in length at the least, and so broad as the shouell will conueniently giue it leaue, and this swarth thus pared vp, you shall first turne the Whinny or grasse side downward, and the earth side vpward, and so let it lye two or three dayes in the Sunne to dry (for this worke is intended to beginne in the moneth of May) and when that side is well dried, you shall turne the other side, and dry it also, then when all the swarth is dryed, you shall gather sixe or seuen peeces together, and turning the Whinny or grasse side inward, and the earth side outward, you shall make round, hollow little hils thereof much what according to the fashion of this figure following:

And



And the inward hollownesse like vnto the hollownesse of an Ouen, but much lesse in compasse, which done, you shall fill the hollownesse with dry chips, or small stickes, or Furres and Straw mixed together, which you shall put in at the vent-hole which shall be left on one side of the hill, and kindling it with fire, you shall burne all that swarth in such sort as you burnt the rootes of your Furres and Broome before; for this is also called a burning of Baine, as well as the former; for it is a most principall nourisher of the earth, and a very sudden destroyer of all malignant weedes whatsoever.

Breaking of
Baines.

After the burning of your hills, as soone as the fire is vtterly quenched and gone out, and no heate at all left in the hilles, you shall then with clotting beetles beate them all downe to dust, and then with shouels you shall spread the ashes quite ouer all the ground, as was before declared in the former Chapter: and here. It is to be noted, that you must place these hills as thicke and close together as by any meanes possibly you can, making your hills so much the lesse and lower, that

that they may stand thicker and nearer together, and so couer more ground; and thereby the heate and strength of the fire to disperse it selfe ouer all that peece of ground; for the fire burning vpon the ground, doth as much good for the enriching of the earth, and destroying of the weeds, as the ashes doth which are spread vpon the same.

Now after your bayte is in this manner burned and ^{plowing} spread, you shall then (as was before shewed) plowe vp your ground in good large furrowes, then hacke it very small, said it, lime it, and measure it; and of all meanes, there is not any better for this ground then Oxen dung and ashes well mixt together; of which ashes, those of Beane straw, Pease straw, or any other straw, are best; and those of Wood or Ferne next; those of Char.coale next, and those of Sea.coale or Pit.coale are the worst of all: Swines dung is not much amisse for this ground; for though it be a great breeder of weedes and thistles in good or fertile grounds, yet in this cold hard and barren earth it worketh no such effect; but is a great comforter, and warme moystner of the same.

After you haue thus made your ground; as soone as wheate seeds time cometh, which is the latter ende of *September*, and beginning of *October*, you shall then with great care plow ouer your ground againe, and take great respect that you turne vp your furrowes much deeper then before, and that for two speciall causes; the first, that the new earth may the better mixe with the old earth; and those helpes that are added thereunto; and secondly, that you may be surer to reare up the roots of all the Whinnes from the very bottome of the earth, not suffering any part of them to remaine behind,

behinde: and for this purpose it shall not be amisse to haue an idle Boy or two to follow your plow, and to gather away all the rootes that shall be torne vp, or any way else left bare about ground, which roots shall be laid on heapes in conuenient places, and then after burnt, and the ashes thereof spread vpon the ground, which will be a very great comfort vnto the seed, being a speedy helpe vnto the sprouting thereof, and a very warme comforter of the root after the stamme is spindled about ground, for in these cold barren earths, nothing doth so much spoyle and slay the Corne, as the dead coldnesse which lyeth at the roote thereof; for in many of these vsfertill places, you shall see Corne at the first sowing (whilest there is a little strength in the ground) sprout in great abundance, promising much hope of the profit; but when it should spindle and come to much better perfection; that poore strength being spent and consumed, and the cold and drynesse of the soyle, hauing as it were overcome all matter of comfort, then presently you shall see the blade of the Corne turne yellow, the stem or stalke to wither, and either put forth no eare at all, or else a very poore little empty one, being laden with nothing but a most dry chaffie huske without substance. But to come againe to our purpose, after you haue thus plowed vp your ground the second time, you shall then hacke it againe, and harrow it, as was declared in the other former Chapters; then you shall take your seede-wheate which hath bene steeped either in brine or Sea water, and to every bushell of that seede you shall adde a bushell of Bay salt, and mixe them very well together in your Hopper or Sydlop, and so sowe them together vpon the ground, ob-

seruing

seruing to double your casts so oft, that you may not faile to cast that true quantity of seed into the earth which otherwise you would haue done if so be there had bene no mixture at all, for to doe otherwise were to deceiue the ground, and a handfull of seede so sowed, would be the losse of a pecke in the time of Harvest; therefore haue great respect that your ground haue his due, for it is no more cost though it be a litle labour.

When your seed is sowed, you shall harrow it againe *Harrowing* the second time, cloe it, smooth it and sleight it, as was before declared in the former Chapters.

As touching the weeding of this ground, it is the least *Weeding.* labour of all other, for the earth being so corrected as is before shewed, it will naturally of it selfe put forth no weeds, especially if you remember to plow it deepe, and be sure to teare vp and gather away all the quicke roots, otherwise if that labour be any thing neglected, then will it put forth both Whinnes, and great store of other rough weeds, which as soone as you shall perceiue to appeare, you shall presently with your wooden Nippers pull them vp by the roots, as was at large declared in the foregoing Chapter.

Now for the generall profit of this ground thus made *Profit.* and prepared, it is the same that the two former are, that is to say, it will beare you good and sufficient Wheate, in plentifull abundance for the space of two or three yeares, then Barley a yeare after; then Oates three yeates togesher after the Barley; and Pease or Beanes a yeare after the Oates; then lastly, very good Meadow or Pasture, for the space of three or foure years after, and then you shall begin and dresse it againe, as was formerly declared.

Chap.

CHAP. 5.

Of the ordering, Tilling, and Dresting of all barren Clayes, whether simple or else compound, which are over-runne with Ling, or Heath.

THere followeth now successiueely, another sort of barren earth, which indeede is much more sterile and barren then any of the other formerly written vpon, because they, out of their owne natures, do beare a certaine kind of grasse or foode which will relieue ordinary, hard, store-cattell, whether it bee sheepe, goates, or young beasts. But this earth of which I am now to intreate, beareth no grasse at all, but onely a vilde, filthy, blacke browne weede, which wee call Ling or Heath, the tender tops whereof Cattell and wilde Deere will sometimes crop, yet it is to them but little reliefe, and onely maintaineth life and no more. Now al-be some may object vnto me, that this kind of soyle is euer a sandy soile and no clay, as may be seene in most chases, forrests, and downes: yet I answer, that al-be it hold so in generall; yet there are diuerse clayes, especially in mountainous countries, that are pestered with these kind of weedes, as may be seene in the north and north west parts of *Deuon-shire*, in some parts of *Cornwall*, and in many parts both of North and South *Wales*; and these clay grounds which are thus offended with these weedes of Ling or Heath, are much more barren and vnfertill then the sands, because of their much more coldnesse; yet those clayes which are mixed with either blacke sand, dun sand, or yellow sand, and ouer runne thus with Heath or Lyng, are the most barren of all: to make any further description of this

Heath

Heath or Lyng, being a thing so notoriously knowne o-
uer all this Kingdome, I hold it meetely needlesse, one-
ly to say it is a rough browne weede, shooting out abun-
dance of stalkes from one root, with little darke leaues
and flowers on the toppe, of a pale reddish colour, much
inclining vnto Peach colour at the first, but being full
blowne, they are then a little more whitish.

You therefore that haue any such ground, and de-
sire to bring it to fruitfulnessse, and the bearing of good Destroying
o. heath.
corne and grasse in a reasonable abundance; you shall
first with sythes or sharpe hookes (but old sythes are
the better) cut downe all the Heath, or Lyng which
groweth vpon the earth you intend to conuert to good-
nes, so neere the ground as possibly you can; then when
it is cut downe (which wou d euer be at the beginning
of the Moneth of May) you shall let it lye vpon the
ground, day ly tossing and turning it till it become very
dry, then spreading it all ouer the ground, and mixing
or couering it with dry straw of any kinde whatsoeuer,
you shall presently set it on fire in so many seuerall cor-
ners of the field, that all the seuerall fires in the end
may meete in one point, and nor leaue any part of the
mowen Heath or Lyng vnburnt, or any part of the
ground vnschorched; after this is done, and the ground
cooled, you shall with your flak clotting beetles beate
the ashes, hard into the ground, then you shall take a
strong plow, with a broad winged share, and an euen
calture, and you shall plow vp all this ground thus
burnt, in very large and deepe furrowes, by no meanes
picking out any of the quicke roots which shall remaine
in the furrowes so turned vp, but letting them rest
in the earth still, then with your backs, and the helpe
of your iron paring shouell, you shall cut vp the fur-

Another
burning of
baire.

rowes, formerly turned vp, into short pieces of three foot, or three foot and a halfe long, and some lesse, as occasion shall serue; then with these pieccs, you shall build little hollow hills, such as in the former Chapter you made of the vpper swarth of the ground onely; and then filling the hollownesse with dry heath, and dry straw mixt together, you shall set euery hill on fire, and so burne the very substance of the earth into ashes, which will soone be done by reason of the infinit number of roots and small strings which lye mixt in the earth, and the drynesse thereof occasioned by the former burning; And this is another kind of burning of Baire much differing from all the former, and yet to as great end and profit as any whatsoeuer, and these hills must as the former, be placed one as neere another as is possible, so as they may spread and couer ouer the greatest part of the ground, and leauing no more then a good reasonable path to passe betweene hill and hill.

Now as soone as you haue thus burned all your Baire, and that your hills are cold, you shall then as was before shewed in the former Chapters, with beetles and shouells breake downe the hills, and spread the earth and ashes ouer all the ground; which done, you shall fand it (if the situation of the ground bee answerable thereunto) and lime it in such sort as was shewed in the second Chapter, then when it is limed, and the lime equally spread, not more in one place then in another, you shall then measure it with the best measure you can provide, of which there is none better or more proper for this ground then mans ordure, and the rubbish, sweepings, parings and spitlings of houses mixt together; or for want of this (because it may not be in
sq.

so great plenty as other measures) you may take either old Ox dung, or Horse dung, or for want of them, the old rotten and mouldy saddles or bottomes of Corne-stacks, or reeds; especially Pease-stacks, or Beane-stacks, provided that it be thorowly rotten, for the lesse rotten it is, the worse it is: Also the scowrings of common Sewers, and especially those through which much of mans vrine doth passe, is a most wonderfull and beneficiall measure for these grounds, so are also the scowrings of sinkes and channels which come from Kitchens and wash-houses, where great store of Brine and salt broth is shed, and other greasie, fat and putrified substances, as also abundance of sope suddes, and buck-ashes, and other sope and lee washings, then which there is no better measure that can be vsed for these kind of grounds.

After your ground is thus perfectly made and measured, and that Wheat seede time doth draw on, which (as before was shewed) is euer at the latter end of *September*, you shall then plow vp your ground againe in that manner as was shewed for the former earths; to wit, much deeper then before: for you are to vnderstand, that this ground being drest as is before declared, there will remaine nothing of the furrowes which were first plowed vp but the ashes, which being couered with sand, lime, and manure, the earth will lie plaine and leuell, so that of necessity you must raise vp new furrowes of new earth, which being done, you shall then with your haks, cut all the new earth into very small pieces; mixing them well with the other mould made of sand, lime, manure and ashes, then as was before said, you shall harrow it to make the mixture so much the better, and the mould so much

the finer; and then if it hane bene sanded, you may sowe your Seede-wheate simply of it selfe, without any doubt of the plentifull increase thereof; but if it hane not bene sanded, then as in the fore going Chapter, you shall not onely sleepe your Seede in brine (as before shewed) but also you shall mixe your Seed with Bay salt, and so sow it into the ground; or if at the time of sowing (after it is plowed, hackt, and harrowed) you bestow either Pigeons dung, or Pullens dung, or Sheepes dung vpon the land, it will be much better, and the Corne will giue a much greater increase. Now as soone as your land is sowne, you shall then forthwith harrow it againe and couer the seede very close, then you shall clot it, smooth it, and sleight it (as was before shewed.)

OF Weeding.

As touching the weeding and clensing of this earth after the Corne is sprung vp, you shall vnderstand that there is great care to be had thereunto, for this ground is much subiect vnto weedes, and those of the worst kinde: for although for the most part it will bee free from all manner of soft and tender weedes, as thistles, cockle, darnell, ketlockes, dockes, rape, and such like herball stuffe; yet is it much subiect to twitch bryars, which grow at both ends; lyng, Wild time, and such like, any of which as soone as you shall see appeare or peepe about the earth, you shall presently with your Nippers pull them vp by the rootes, and not suffer them in any wise to looke a handfull about the ground, for if you doe, their hardnesse is so great, and their rootes so large and fast fixt in the mould, that you can by no meanes pull them away without great losse and hurt to the graine, pulling vp with them all such roots of Corne, as shall bee fixed neere about them: for
any

any other weake & superfluous things which shall grow from the Land, you may with ordinary weeding-hookes cut them away; as for long grasse, whether it be soft or sedge, or any other such like stuffe, you shall not stirre it, but let it grow: for it keepeth warme the rootes of your Corne; and giueth nourishment and increase thereunto: Now for the profit of this soyle thus ordered and husbanded, it is equall with any of the former, and will beare Wheate very plentifully for the space of the three first yeares; good Barley the fourth yeare, with the helpe of the sheepe-fold (as was before sayd) and good Oates the fifth, sixth and seventh yeares; and very good small Pease the eighth yeare, (for beanes this soyle will very hardly beare at all) and the ninth, tenth and eluenth yeare it will beare very good meadow (though not altogether very fine pure grasse, yet very good feeding and wholesome grasse for good pasture as a man can reasonably require for any holding Cattell whatsoever; nay, it will also indifferently well feed, and fat Cattell, though peraduenture it requieth a little longer time then other finer grounds will.

CHAP. 6.

Of the ordering, Tylling and Dressing of all plaine, simple barren Sands, bearing nothing but a short mossie grasse.

HAVING thus (in as large manner as I hope shall be needfull for any iudiciall or indifferent Reader) written of the Natures Orderings, Plowings and Dressings of all manner of barren and vnfruitfull Clayes, whether they be simple of themselves, or else com-

pounded with other earths, as sands, chalkes, gravelles, and such like; shewing by those naturall burthens which continually of their owne accords, they produce (which indeede is the easiest and safest way of knowledge) how to amend and better them and bring them to that perfection of fruitfulnessse, that the best earths shal but in a very small degree exceede them, nay, hardly any thing at all, except in the saving of a little charge and some labour, without which nothing is to be obtained by the Husbandman; neither is this charge or labour thus bestowed on these barren grounds to be grudget at by any honest minde; since the worst crop of ten or eleven, will make good his charge and toyle with a reasonable interest; so that I make account, nine or ten yeares profits come into his Bames without purchase, for it is to be intended that all these earths formerly spoken of, are not to be drest or to put the Husbandman to any charge more then the first yeare of ten or eleven, for the second yeare he shall asloons as hee hath gathered his Wheate off, which will bee in *August*, and finisht other parts of his Haruest; presently put his Plow into the same Wheate-ground againe and plow it vp, hacke it, harrow it, sowe it, harrowe it againe, clot it, and weede it, as in the former yeare, and so consequently of all the rest of the yeares following, whereby you perceiue that all labours and charges are saved more then once plowing and sowing.

This then considered, it necessarily now followeth that I speake of the bettering and bringing into perfection of all manner of barren Sand-groundes, beeing simple of themselves, without any mixture of other Earthes, except one and the same kinde, as Sand
with

with sand, though peradventure the colours of the sands may alter; as red with white, yellow with blacke, &c. which in as much as the whole substance is sand without any contrary mixture; therefore it may well be called simple and not compound: and of these sands, I purpose to intreate, as formerly I did of the Clayes; that is to say, by their outward faces and Characters, which are those burthens and increases which of their owne proper natures, without any helpe or computation of any others, they produce and bring forth into the world.

And first of that naughty cold and barren sand, which lying vpon high, stony, and mountainous Rocky places, or else vpon lower cold bleake Plaines, subiect to the North and North-east winds and tempests, or bordering vpon the Seas, doth not bring forth any thing but a short mossie grasse which the Sun maketh bitter, & the cold dewes fulsome and such vnflauory in taste. If any man then be master of vnprofitable and vnfruitful earch, and desire to haue it brought to goodnesse and perfection, he shall, first, at the beginning of the Spring, as about midde *April* or earlier, with a strong Plow answere. *Plowing.* rable to the soyle, yet somewhat lesse both in timbers and irons then that wherewith you plow your Claye grounds: you shall plow so much of that earth vp as you may conveniently compasse to sowe and dresse exactly and perfectly; for to vndertake more, were to make all vnprofitable, and to cast away much labour and charge without any profit; this ground you shall plow of an indifferent depth, though not so deepe as the Clayes, and you shall lay the furtowes though flat, yet close one to another, without leauing any balke betweene, but plowing all very cleane; yet not so

D 4

very

very cleane and close together, that you may lay the greene swarth to the new plowed or quicke earth; but when it turne one swarth against another, & so as the furrowes may lye; and no more but touch the edges one of another. This when you haue done, you shall then with your hacks cut and breake all the earth so turned vp into very small pieces, and not ouely the earth so turned vp, but also all other greene swarth which was left vplowed; provided; that before this labour of hacking, you let the ground lie certaine dayes in the furrowes, that one swarth heating and lealding the better, they may both equally rot and grow mel- low together, which once perceived by the blacknesse thereof, you may then at your pleasure hacke it and cut it as is before declared.

Obiection.

Now some may in this place object vnto me, that this labour of hacking should be needlesse, in as much as all sand grounds whatsoever are out of their owne natures so light y loose, and vvwilling to disscuer, that this toyle might very well and to good purpose be saued.

Answer.

To this I answer, that true it is, most sands in their owne natures are loose, and light, and willing to disscuer into fine mould without any extremity; especially rich and fruitfull sands; whose predominant quality of warmth giueth nourishment and increase; but these barren and cold sands, in which is a certaine flag- marique roughnesse and sooth y vvwholesome drinesse; are of a cleane contrariety, and through the stony hardnesse thereof, they are as vnapt to breake and disscuer as any Clay whatsoever: besides, the swarth being of a tough &rosse substance, which euer carrieth a hard strong roote insweatable with the cold in which

it is ingendred) doth so constantly binde, tetter, and hold the mould together, that it is impossible for any harrow to breake it in pieces, or to gather from it so much mould as may serue to couer the Corne and giue it roote when it is sowne into the same; and therefore this worke of hacking is necessary.

When therefore you haue thus hackt your Land, and distributed the mould into many small pieces, you shall then with all expedition marle it; which forasmuch as it is no generall or common practice in euery part of this Kingdome, I will first tell you what Marle is, and then how to find it, digge it, and vse it for your best behoofe.

Of Marling.

Marle, you shall then vnderstand is (according to the definition of Master Bernard Pallissy) a naturall and yet an excellent soyle, being an enemie to all weedes that spring vp of themselues, and giuing a generatiue vertue to all seedes that are sowne vpon the ground, or (for the plaine husbandmans vnderstanding) it is a certaine rich, stiffe and tough Clay, of a glew-like substance and not fat or Oylie as some suppose. This Marle is in quality cold and dry and not hot (as some would haue it) and it was earth before it came to be Marle, and being made Marle yet it is but a Clay ground; all Chalke whatsoeuer was Marle before it was Chalke, and all manner of Stones which are subiect vnto Calcynation or burning, as Lime-stone; Flint, or the like, were first Marle before they were stones, and hene y hardened by accident and so impossible to be dissolued but by fire: as for Marle it selfe when it is a little hardened it is one y dissolued by frosts and nothing else, and thence is the cause that Marle ~~worketh~~ worketh better effects the second yeare then the first.

Additions.

This

This Marle hath beene made so precious by some writers that it hath beene accounted a sift element, but of this curiosity I will not now dispute.

Touching the complections or colours of Marle, there is some difference, for though all conclude there are foure severall colours in Marle, yet one saith, there is a white, a Gray or Russet, a Blacke and Yellow; another saith, there is a Gray, a Blew, a Yellow and a Red; and a third saith, there is a Red and white mixt like vnto porphery, and all these may well be reconciled, and the colours may alter according to the Climat and strength of the Sunne: So that by these Characters the colour, the toughnesse, and the loosenesse when it is dried, any man of iudgement may easily know Marle from any other earth whatsoever. This Marle is so rich in it selfe, and so excellent for continuance, that it will maintaine and enrich barren grounds, the worst for ten yeares, some for a dozen, and some for thirty yeares; yet there is a great respect to be had in laying of this Marle vpon the ground, that is to say, that you lay it neither too thicke nor too thinne, that you giue it neither too much, nor too little, for any of these extremities are hurtfull; and therefore hold a meane, and see there bee an indifferent mixture between the Marle and the earth, on which it is laid.

For the generall finding out of this Marle, there is no better way for readinesse and the saving of charges, then by a great Augure or wimble of Iron made to receiue many bits one longer then another, and so wrighting one after another into the ground to draw out the stearth till you finde you are come to the Marle, which perceived and an assay taken, you may then digge at your pleasure.

Now

Now for the places most likely where to finde this Marle, it is commonly found in the lowest parts of high Countreies, neere Lakes and small Brookes, and in the high parts of low Countreies, vpon the knols of small hills, or within the Clifts of high Mountaineous bankes, which bound greater Riuer in: to conclude, you shall seldome finde any of these barren sands but they are either verded about with marle grounds, or if you will bestowe the labour to digge below the sand, you shall not faile to finde either marle or some quarrie of stone, or both; for in some places marle lyeth very deepe, in other some places within a spades graffe of the vpper swarth of the earth: therefore it shall be good for you to make prooffe of all the most likely parts of your ground to finde out this marle; and as soone as you haue found it out, you shall with mattocks and spades digge it vp and carry it to your land, there laying it in bigge round heapes, and setting them within a yard or two one of another; thus when you haue filled ouer all your ground (which would be done with as great speed as might be, for the ancient custome of this Kingdome was, when any man went about to marle his ground, all his Tenants, Neighbours and friends would come and helpe him to hasten on the worke) you shall then spread all those heapes, and mixing the Clay well with the Sand, you shall lay all smooth and leuell together, and herein is to be obserued, that if the land you thus marle shall lye against the side of any great Hill or Mountaine, whereby there will bee much descent in the ground, then you shall (by all meanes lay double as much Marle, sand, or other compasse on the toppe of the hill as on the bottome, because the

William Vicarior his

the raine and showers which shall fall will euer wash the fatnesse of the earth downe to the lowest parts thereof.

Now in the laying of your marle, you are to hold this obseruation, that if you laye it on hard and binding grounds, then you are to lay it in the beginning of Winter, but if on grounds of contrary nature, then it must be laid in the Spring or Summer. Againe, you shall obserue, that if you cannot get any perfect and rich marle, if then you can get of that earth which is called Fullers earth, and where the one is not, commonly euer the other is, then may you vse it in the same manner as you should marle, and it is found to be very neere as profitable.

†
Additions.
Obseruations

Of Chalke, and
the vic.

When your ground is thus marled (if you bee neere to the sea-side) you shall then also sand it with salt sea-sand, in such sort as was formerly declared, onely you may forbear to lay altogether so much vpon this sand ground as you did on the Clay ground, because an halfe part is fully sufficient. If you cannot come by this salt-sand, then in stead thereof, you shall take chalke, if any be to be had neere you, and that you may lay in more plentifull manner then the sand; and al-be it is sayd that chalke is a wearer out of the ground, and maketh a rich father, yet a poore sonne, in this soyle it doth not hold, for as it fretteth and wasteth away the goodnesse that is in Clay groundes, so it comforteth and much strengtheneth these sand earthes: and this chalke you shall laye in the same manner as you did your marle, and in the same manner spread it and leuell it; which done, you shall then Lime it, as was before shewed in the Claye grounds, yet not so abundantly, because also a halfe part will bee sufficient; after your Liming, you shall then measure it with the best measure that you haue, whether it bee
dun

dung of Cauteil, Horse, Sheepe, Goats, straw, or other rubbish; and that being done, and seede-time drawing on, you shall then plow vp your ground againe, mixing the new quicke earth and the former soyles so well together, that there may be little distinguishment betweene them; then you shall hacke it againe, then harrow it, and lastly, sow it with good, sound, and perfect seed, and of seedes though Wheate will very well grow vpon this earth, yet Rye is the more naturall and certaine in the increase: yet according to the strength of the ground, you may vse your discretion, obseruing that if you sowe wheate, then to steepe it before in brine or salt sea water, as was before described; but if you sowe Rye, then you shall sow it simply without any helpe, except it be Pigeons dung, or Bay-salt simple of it selfe, in such manner as hath beene before declared; either sowing the salt with the Corne, or before the Corne, as shall seeme best in your owne discretion.

After your seede is sowne, you shall then harrow it againe, clot it, smooth it, and sleight it, as before is shewed in the second Chapter, which done (after the Corne is shot aboue the earth) you shall then looke to the weeding of it, being somewhat a little too much subiect to certaine particuler weedes, as are Hare-bottles, wild Chesse-bolles, Gypsy-flowers, and such like, any of which, when you see them spring vp, you shall immediatly cut them away close by the rootes, as for tearing their rootes out of the ground with your Nippers, it is not much material, for the cutting of them is sufficient, and they will hardly euer againe grow or do you any hinderance, many other weedes there may grow amongst these which are also to be cut away, but these

these are the principall, and of most note wherefore as soone as you haue cleas'd your lands of these and the rest, you shall then referre the further increase of your profit vnto Gods prouidence.

The Profits.

Lastly, you shall vnderstand that this ground being thus plowed, drest, and ordered, will without any more dressing, but once plowing and sowing, euery yeare beare you good Wheate or good Rye three yeares together; then good Barley the fourth yeare; good oates the fifth, sixth and seuenth yeares; excellent good Lupins the eighth yeare, and very good Meadow or Pasture three or foure yeares after, and then it shall be necessary to dresse it againe in such manner as was before described.

CHAP. 7.

Of the Plowing, Tilling, Ordering and Inriching of all Barren Sands which are laden and ouer-runne with Braken, Ferne, or Heath.

NExt vnto this plaine, cold, barren Sand, which beareth no other burthen but a short mossie grasse; I will place that Sand which is laden and ouer-runne with Braken, Ferne, or Heath, as being by many degrees more barren then the former, both in respect that it is more loose, and lesse substantiall, as also in that it is more dry and harsh, and altogether without nutriment, more then an extreame sterile coldnesse, as appeareth by the burthen it bringeth forth, which is Braken or Ferne, a hard, rough; tough weede, good for nothing but to burne, or else to litter store-beasts with, for the breeding of meature; or if you strow it in the high-ways where many traouellers passe, it will also there turne

to

to good reasonable compasse.

21 Of this kind of ground if you be maister, and would ^{Of destroying} reduce it vnto fertility and goodnesse, you shall first, ^{Braken.} whether the Braken be tall and high (as I haue scene some as high as a man on Horse-backe) or short and low (as indeede most commonly these barren earths are, for tall Ferne or Braken shewes some strength in the ground) you shall with sythes first mowe it downe in the moneth of *May*, then wither it and dry it vpon the ground, and after spread it as thinne as you can ouer all the earth you intend to plow, which done, you shall bring your plow and begin to plow the ground after this order: first, you shall turne vp your furrow, and lay it flat to the ground, Greene swarth against Greene swarth, then looke how broad your furrow is so turned vp, or the ground so couereth, and iust so much ground you shall leaue vnplowed betweene furrow and furrow, so that your land may lye a furrowe and a Greene balke, a furrowe and a Greene balke, till you haue gone ouer all the ground, then shall you take a paring shouell of yron, and pare vp the Greene swarth of all the balkes betweene the furrowes, at least two inches thicke, and into peeces of two or three foote long, and with these peeces of earth, and the dry Ferne which is pared vp with them, you shall make little round hollow Baite hills, as in the third and fourth Chapters; and these hills shall be set thicke and close ouer all the ground, and so set on fire and burnt; then when the fire is extinct, and the hills cold, you shall first with your hacks cut in peeces all the furrows that were formerly turned vp, and then breake downe the burnt hills, and mixe the ashes and earth with the other mould very well together; which done, you shall then

Of Marle.

then with all speede marle this earth as sufficiently as possibly may be, not scanting it of marle, but bestowing it very plentifully vpon the same; which done, you shall then plow it ouer againe, and plowing it exceedingly well, not leauing any ground whatsoeuer vntorne vp with the plow; for you shall vnderstand that the reason of leauing the former balkes, was that at this second plowing after the marle was spread vpon the ground, the new, quicke, and vnstirred fresh earth might as well bee stirred vp to mixe with the marle, as the other dead earth and ailes formerly received, whereby a fresh comfort should be brought to the ground, and an equall mixture without too much drynesse, and this second Ardor or plowing would begin about the latter end of *June*.

Sanding and
liming.

After your ground haue bene thus marled, and the second time plowed, you shall then sand it with salt Sea-sand, lime it, and measure it, as was declared in the fore-going Chapter: and of all measures for this soyle, there is not any so exceeding good as sheepes measure, which although of the Husbandman it bee esteemed a measure but of one yeare, yet by experience in this ground it hapneth otherwise, and is as durable, and as long lasting a compasse as any that can be vsed, and besides it is a great destroyer of thistles, to which this ground is vey much subiect, because vpon the alteration of the ground the Ferne is also naturally apt to alter vnto thistle as we daily see.

Plowing and
sowing.

When your ground is thus dressed and well ordered, and the Seede-time commeth on, you shall then plow it againe, in such manner as you did the second time, that is to say, very deepe, cleane, and after the manner of good Husbandry, without any rest balkes or other disorders:

disorders: then shall you hacke it ~~very~~ well, then harrow it, and then sow it; but by mine aduice, in any case, I would not haue you to bestow any Wheate vpon this soyle (except it be two or three bushels on the best part thereof for experience sake, or prouision for your household) for it is a great enimie vnto Wheate, and more then the marle hath no nourishment in it for the same, because all that commeth from the salt sand, lime, and manure is litle enough to take away the naturall sterility of the earth it leise, and giue it strength to beare Rye, which it wil doe very plentifully; and therefore I would wish you for the first three yeares onely, to sow the best Rye you can get into this ground; the fourth yeare to sow Barley; the fift, sixt, and seventh, Oates; and of Oates, the bigge blacke Oate is the best for this ground, maketh the best and kindlyest Oat-malt, and feedeth Horse or Cattel the soundest; as also it is of the hardest constitution, and endureth either cold or drynesse much better then either the white Oate, the cur Oate, or any Oate whatsoever; the eight yeare, you shall onely sow Lupins or Fitches; and three yeares after, you shall let it lye for grasse, and then dresse it againe as before said; for it is to be vnderstood, that in all the following yeares (after the first yeare) you shall bestow no labour vpon this ground more then plowing, trowing, hacking and harrowing at Seed-time onely.

But to proceed to the orderly labour of this ground, after you haue sowne your Rye, you shall then harrow it againe, clot it, smooth it, and slight it, as was before shewed in the second Chapter of this Booke. And although a man would imagine that the sandy looknesse of this soyle would not neede much

Labour after
trowing.

E

clotting

cloning or neighting of the Earth, yet by reason of the mixture thereof with the Marle and meazure, it will so hold and cleaue together, that it will aske good strong labour to loosen it and lay it so hollow and smooth as in right it should be.

Weeding.

Touching the weeds which are most subiect to this soyle, they are Thystles, and young Brakes or Fernes which will grow vp within the Corne, which before they rise so high as the Corne, and euen as it were at the first appearing, you must with your wooden Nypers pull vp by the roots, and after take vp and lay in some conuenient place where they may wither and rot; and so turne to good meazure.

CHAP. 8.

Of the Plowing, Tilling, Ordering, and Enriching of all barren Sands, which are laden and over-runne with Twitch, or wyld Bryar.



Having written sufficiently of this hard and barren, wast, wyld, sandy ground; which is over-run with Braken, Ferne, Heath, and such like: I will now proceed, and vnto it ioine another land which is much more barren, and that is the land that bringeth forth nothing but wyld Twitch, Bryars, Thorne-bush, and such like vndergrowth of yong misliking wood, which neuer would rise or come to profit, the bitter cold drynes of the earth wherein it groweth; and the sharpe stormes to which the clime is continually subiect both day and night, blasting it in such manner that nothing appeareth but starued, withered, and vterly vnprofitable burthens, good

good for nothing but the fire, and that in a very-simple sort. Such ground if you bee Master of, and would rednce it to profit and fruitfulnessse, you shall first with hookes or axes cut vp the vpper growth thereof, that is, the bushes, young trees, and such like, then you shall also stubbe vp the roots, not leauing any part of them behind in the earth, carrying away both home to your house to be employed either for fuel, or the mending of the hedges, or such like, as you shall haue occasion; this done, you shall take a paire of strong yron harrowes, and with them you shall harrow ouer all the earth, tearing vp all the Twitch, Bryars, and rough grasse so by the roots, that not any part but the beare earth may bee seene, and when your harrowes are cloyed, you shall vnlade them in seuerall places of the ground, laying all such rubbish of weedes and other stuffe, which the harrowes shall gather vp, in a little round hill, close vp together that they may sweat, wither and dry, then spreading them abroad and mixing them well with dry straw, burne them all ouer the ground, leauing no part of the weeds or grasse vnconsumed, then without bearing in of the ashes, you shall presently plow the ground all ouer very cleane as may be, laying the furrows as close as you can one to an other, & leauing no earth vntoucht or vntorne vp with the plow, which done, you shall immediately hack it into small pieces, & as you hack it, you shall haue idle Boyes to goe by the Hackers, to gather away all the roots which they shall loosen or breake from the mold, & laying them on heaps in the worst part of the ground, they shall there burne them, and spread the ashes there, on, after your ground is thus harrowed, plowed, & hackt, you shall then mucke it, as was formerly shewed in the

Destroying
of Twitch
and Bryar,

sixt Chapter, then shall you sand it, lime it, and meaure it as before said.

Measures;

Now of measures, which are most proper for this soyle, you shall vnderstand that either Oxe, or Horse measure, rotten straw, or the seowing of Yards is very good, prouided that with any of these measures, or all these measures, you mixe the broad-leaved weedes, and other greene weedes, which grow in Ditches, Brookes, Ponds or Lakes, vnder Willow trees which with an Iron Rake, Drag, or such like instrument, you may easily draw vpon the banke, and so carry it to your land, and there mingle it with the other measure, and so let it rot in the ground, this measure thus mixed is of all other most excellent for this soyle, both by the experience of the Ancients who haue left it vnto memory, as also by daily practice now vsed in sundry parts of this Kingdome aswell because of the temperate coolnesse thereof, which in a kindly manner asswageth the lime and sand, as also through the moisture which distilling through those warme Soyles doth quicken the cold starued earth, and giueth a wonderfull increase to the seed that shall be throwne into the same.

Harrowing
and other
laboures.

After your ground is thus sufficiently drest with these soyles and measures, you shall then plow it againe the second time; which would be after *Michaelmas*, after the plowing you shall then hacke it againe, and be sure to mixe the earth and the measures very well together, then you shall breake it in gentle manner with your Harrowes, and then sow it; which done, you shall harrow it againe, but then you shall harrow it much more painefully, and not leaue any clots or hard earth vnbroken that the Harrow can pull in pieces: as touching

touching the seede which is fittest for this earth, it is the same that is spoken of in the next foregoing Chapter: as namely, the best Rie or the best Maslin, which is Rie and Wheate equally mixt together, or if there be two parts Rye, and but one Wheate, the seede will be so much the more certaine and sure holding, and this seede you may sowe on this ground three yeares together, then Barley, then Oates, and so fourth, as is formerly writ of the grounds foregoing. After your ground is sowne and harrowed, you shall then clot it, sleight it, and smooth it as you did the other grounds before, and then lastly with your backe Harrowes, that is, with a paire of harrowes, the teeth turned vpward from the ground, and the backe of the harrowe next vnto the ground, you shall runne ouer all the ground and gather from the same all the loose Grasse, Twitch, or other weedes that shall any waies be raised vp, and the same so gathered, you shall lay at the lands end in heapes, either to rot for manure, or else at the time of the yeare to be burnt for ashes, and sprinkled on the earth the next seed time.

Lastly touching the weeding of this soyle, you shall vnderstand the weedes which are most incident therunto, are all the same you first went about to destroy: as namely, Twitch, rough wild Grasse, and yong woody vndergrowth, besides Thistles, Hare-bottles, and Gipsie flowers; therefore you shall haue a great care at the first appearance of the Corne, to see what weedes arise with it, (for these weedes are euer fully as hasty as the Corne) and as soone as you see them appeare, both your selfe and your people with your hands shall pull them vp by the rootes, and so weede your land as you would weede a garden, or Wood-ground.

ground. Now if at this first weeding (which will bee at the latter Spring commonly called *Michaëlmass*, or the Winter Spring) you happen to omit and let some weeds passe your hands vn pulled vp) which very well may chance in so great a worke) you shall then the Summer Spring next following (seeing them as high or peradventure hieer then the Corne) with your woodden nippers pull them vp by the roots from the ground, and so cast them away: As touching the cutting them vp close by the ground with ordinary weede hookes, I doe in no sort allow it, for these kinde of weeds are so apt to grow, and also so swift in growth, that if you cut them neuer so close in the Spring, yet they will againe ouermount the Corne before haruest, and by reason of their greatnesse, roughnesse, and much hardnesse choake and slay much Corne that shall grow about them, and therefore by all meanes you shall pull these weeds vp by the roots whilst they are tender, if possibly you can, or otherwise in their stronger growth, for their sufferance breedeth great losse and destruction.

CHAP. 9.

Of the Plowing, Tilling, Ordering And Enriching of all barren Sands which are ouer runne with mores or morish sinking long Grasse.



Unto these fore going barren Sands, of which I haue already written, I will lastly ioine this last barren Sand, being of all earths, whether Clay or Sand the most barrenest, and that is that filthy black, mossy Sand which beareth nothing but a sinking, putrified

ed Grasse or Mosse, or Mosse and Grasse mixed together, to which not any Beast or Cattell, how course or hardly bred soeuer, will at any time lay their monthes: and this kinde of ground also is very much subiect to marishes and quagmites, of which that which is couered with Mosse, or Grasse, is the worst, and that which is rusted aboue with rushes, the best and toonest reduced vnto goodnesse; in briebe, all these kinds of grounds generally are extreemly moist and cold, the superabundance whereof is the occasion of the infinite sterility and barrenesse of the same.

And therefore hee that is master of such vnprofitable Earth, and would haue it brought to some profit or goodnes, shall first consider the situation of the ground, as whether it lie high or low, for some of these marish grounds lie low in the Vallies, some on the sides of Hilles, and some on the tops of Mountaines; then whether the much moistnesse thereof bee fedde by Riuer, Lake or Spring, whose veines not hauing current passe through or vpon the earth, spreads lookingly ouer all the face thereof, and so rotting the mould with too much wette, makes it not onely vnpassable, but also vtterly vnprofitable for any good burthen.

Now if you finde that this marish Earth lie in the bottome of low vallies, as it were gerded about with hilles or higher grounds, so that besides the treading of certaine Springs, Lakes, or Riues, euery shoure of raine or falling of water from higher grounds bringeth to these an extraordinary moisture to maintaine the rottenesse, in this case this ground is past cure for grasse or Corne, & would onely be conuerted and made into a fish pond for the breeding and feeding of Fish, being a

thing no lesse profitable to the Husband man for scooping his house; and furnishing the market then his best corrie land hee hath; and therefore when hee maketh any such pond, he shall first raise vp the head thereof in the narrowest part of the ground, and this head by driving in of stakes and piles of tough and hard wood as Elme, Oake, and such like, and by ramming in of the earth hard betweene them, and sodding the same so fast that the mould can by no meanes be worne downe or vndermined with the water, hee shall bring it to as firme earth as is possible, and in the midst of this head he shall place a sluice or flood-gate made of sound and cleane Oke timber and planks, through which at any time to drayne the Pond when occasion shall serue; and this done, you shall digge the pond of such depth as the earth conveniently will beare, and casting the earth vpon either side, you shall make the bankes as large and strong as the ground requireth, then if any spring which did before feede the earth be left out of the course passe of the pond (because it lieth too high to bee brought in) then shall you by drawing gutters or draines from the spring downe to the pond, bring all the water of the springs into the pond, and so continually feede it with fresh and sweete water. Then storing it with Fish of best esteeme, as *Carpe*, *Tench*, *Breams*, *Pearls*, and such like, and keeping it from weeds, filth and vermine, there is no doubt of the dayly profit.

But if this marish and low ground, though it lye low and haue many springs falling vpon it, yet it lieth not so extreame low but that there is some Riuer or dry ditch bordering vpon it, which lye in a little lower descent, so that except in case of inundation the riuer and ditches are free from the moysture of this ground, but where

Where there is any over-flowing of waters, there this marshy ground must needs be drowned in this case this ground can hardly be made for Corno, because every over-flow putteth the graine in danger, yet may it be well converted to excellent pasture or meadow, by finding out the heads of the springs, and by opening and cleansing them, and then drawing from those cleansed heads, narrow drains or furrowes, through which the waters may passe to the neighbour ditches, and so be conveyed downe to the lower Rivers, leaving all the rest of the ground dry, and suffering no moystures to passe, but what goeth through these small deepe channels, then as soone as summer cometh, and the ground begins to harden, if you see any of the water stand in any part of the ground, you shall forthwith mend the drains, and helpe the water to passe away, which done, (as the ground hardeneth) you shall with hakes and spades lay the swarth smooth and plaine, and as early in the year as you can conveniently, you shall sow upon the ground good store of hay-seedes, and if also you do measure it with the rotten staddles or bottomes of hay-stacks, it will be much the better, and this staddell you shall not spread very thicke, but rather of a reasonable thinnesse, that it may the sooner rot and consume upon the same.

But if this marshy and filthy ground doe not lye so low as these low valleyes, but rather against the tops of hills, you shall then first open the heads of all the springs you can finde, and by severall drains or sluices, draw all the water into one draine, and so carry it away into some neighbouring ditch and valley, and these drains you shall make of a good depth, as at least two foote, or two foote and a halfe, or more, if neede require,

Draining of
wet ground.

require, and then crosse-wile, euery way ouer-ahwart the ground; you shall draw more shallow furrowes, all which shall fall into the former deepe draines; and so make the ground as constant and firme as may be: then hauing an intent to imploy it for corne, you shall bring your plow into the ground; being a very strong one, and not much differing in Timber worke or Irons from that which turneth vp the clay grounds, and laying before the plow long waddes, or roulees of the straw of Lupines, Pease, or else Fetches, (but Lupines is the best) you shall turne the furrowes of earth with the plowe vpon the waddes, and so couer or bury them in the mould, and thus doe vnto euery furrow, or at least vnto most of the furrowes you turne vp, and so let it lye a little time to rot, as by the space of a fortnight or three weekes, in which space, if the ground receiue not rayne and moysture enough to rot the strawe thus formerly buried, you shall then by stopping the draines, and making the Springs ouer flowe, gently wash the ground all ouer and no more, and then presently draine it againe; which done, as soon as the earth is dry, you shall hacke it and breake into small peeces, and then you shall also Sand it, Lime it, and manure it.

And lastly, you shall marle it, but if no salt sand be to be had, then in stead of it, you shall chalke it; yet of all the rest you shall take the least part of chalke.

This done, about the latter ende of *Iuly* you shall plow vp the ground againe with somewhat a better and deeper stretch then you did before; that if any of the strawe be vmotted or vnconsumed, it may againe be raysed vp with the new moyst earth, and so made to waste more speedily; and in this second carrying you
doe

doe see any great hard clots to rise, then with your hakes you shall breake those hard clots in peeces, laying the land cleane without clots, weedes, or any other annoyauce, and so let it rest till *October*, at which time you shall plow it over againe, hake it, harrow it, and then sowe it with the best seede wheate; for this soyle thus drest and measured, albeit it be of all other the most barren, yet by reason of this moysture which at pleasure may be put to it, or taken from it, and by the mixture of these comfortable soyles and compasses, it is made as good and fruitefull as any earth whatsoeuer, and will beare Wheate abundantly for the space of three yeares together; then good Barley the fourth yeare, with a little helpe of a Sheep-folde, or sheepes meadure; then Rye the fifth yeare; Oates the sixth, the seventh and eighth yeares; small Pease, the ninth yeare; good meadow or pasture three yeares following, and then to be new drest againe, as before sayd.

Now as soone as your seede wheate is sowne, you shall then harrow the ground againe, and be sure to couer the wheate both deepe and close, as for the clots which shall arise from this soile, it shall not matter whether you breake them, or no, for by reason of their moisture, they will be pliant and easie for the wheate to passe thorow, so that you shall not care how rough your land lie, so it lie cleane, and the corne well couered, but for all other seedes, you shall breake the clots to dust, and lay the land as smooth as may be.

Now for the weeding of this soile, you will not be much troubled therewith, because this ground naturally of it owne accord, putteth forth no weedes, more then these which are ingendred by the new made fruitfulnessse

Harrowing.

Weeding.

fulnesse thereof, and those weeds for the most part are a kind of small sedge, or hollow reede; any of which if you see appeare, or with them any other kind of weed, you shall at the first appearance, either pull them vp by the rootes with your wooden nippers, or else cut them close by the ground with your weed-hooks.

CHAP. 10.

A generall way for the enriching of any poore arable ground, either Clay or Sand, with lesse charge then formerly.



F the former demonstrations and instructions which I have shewed thee, appeare neither too difficult, or too costly (for now I speake to the plaine, simple, poore Husband man) and yet thou art maister of none but barren earth, then thou shalt by thine owne industry, or the industry of thy Children, Seruants, and such like, or by contracting with Taylors, Betchers, or any poore people that will deserue a penny, gather vp, get or buy all the ragges, shreds, and base peeces of woollen cloth whatsoeuer, which are onely cast out, and fit for nothing but the dung-hill, and of these if thou cast compasse but a sacke full, or a sacke full and a halfe, it is sufficient for the dressing of an acre of arable ground. These shreads and ragges (torne small) or hackt and hewed into small peeces or bits, thou shalt thinly spread ouer the land before fallowing time, then comming to fallow, plow them all into the ground, and be sure to cover them, then giue your land the rest of it ardors, as stirring, foyling, ridging, &c. in their due seasons, and
after

Ragges of
woollicncloth.

after an Husbandly manner: then when you come to sow it, you shall take the slimie thicke water which commeth from dung-hils; or for want thereof, water in which Cow-dung hath beene steeped, and therein you shall steepe your seed corne, that is to say, if it be Barley, you shall steepe it for the space of thirty fixe howres, or thereabouts; if it be Wheate, but eightene howres; and if it be Pease, but twelue howres; for Rye or Oates, not at all: and the seed thus steeped, you shall sow it according to good Husbandry, and there is no doubt of wonderfull increase.

Steeping of
seed corne.

Or any pulse.

There be others which take the seed-corne, and steeping it in good store of Cow-dung and water, stirre all together for an houre in the morning, and an houre at night, and then being settled, draine the water from the seede and the dung, and the next morning sowe the corne and the dung both together on the land, being sure not to scant the land of seede, and no doubt the increase will be wonderfull.

Now if this cannot be conveniently done, or that you want dung, if then you take ordinary water, and therein steepe your seed it is good also, and especially for Barley, as is approved by dayly experience.

But now me thinks I heare the poore man say, that here is but one acre drest, and that is a small proportion: to this I answer, If thou beeest able but to dresse one acre with these woollen ragges, thou shalt then search amongst the Horners, Tanners, Lanthorne-makers, and such like, and get all the wast shauings of horne which thou canst possibly compasse, and as before of the rags, so of these a sacke and a halfe, or two sackes will dresse an acre: these shauings (which are indeed good for no other v^{se}) you shall scatter vpon the land as you did the ragges,

Shauings of
horne.

Hoofes of cat-
tell.

ragges, then plow them in after the same manner, so order the ground, so sow, and in the same manner steepe the seede, and questionlesse the increase will be wonderfull great: these manures will last five yeares without any renewing. Now if of these you cannot get sufficient to trimme all your ground, you shall then deale with Butchers, Sowle women, Slaughter men, Scullions, and the like; and from these you shall get all the hoofes you can either of Oxe, Cow, Bull, Calfe, Sheepe, Lambes, Deere, Goates, or any thing that cheweth the cud, and which indred, if not for this vse, are otherwise vtterly cast away to the dung hill, and despised; and these hoofes you shall cut and hew into small peeces, and scatter thicke vpon your land at fallowing time, then plow them in as aforesayd, and do in all points as with the other manures already recited, and so steepe your seed, and there cannot be a greater enricher of arable ground whatsoeuer.

Of Woode.

Now if all these will not yet compasse your land, you shall then see what sope ashes you can get or buy, for of all manures there is none more excellent, for besides it giueth an exceeding strength and fatnesse to the land, it also killeth all manner of weedes, great and small, as Broome, Gorse, Whynnes, and the like, and it killeth all manner of Wormes, and venemous creeping things, it is excellent for Woad, and the ground renewed yearly therewith, may bee sowne continually: these sope-ashes must bee layde on the land after the fallowing, and then stirred in, two load thereof will serue to dresse an Acre; when it is fit for seede, the seede must bee steeped as aforesayde, and then sowne, and the increase will quit the charge manifold. These sope-ashes are also excellent good
for

for Hempe & Flaxe, being thinly sowne vpon the land, after is plowed, and immediatly before the Seede bee sowne: But if you haue more land to dresse, then you must make vse of your owne ordinary measure, as is The Inriching of ordinary measure.] Oxe dung, Horse-dung, and the like, which that you may make richer and stronger then other wise of it owne nature, it would be, you shall cause continually to be throwne vpon it all your powdred beefe broth, and all other salt brothes or brines which shall grow or breede in your house, also all manner of soape-suddes, or other suddes, and washings which shall proceede from the Launderie, and this will so strengthen and inrich your measure that euery loade shall bee worth fise of that which wanteth this helpe. There bee diuerse other measures which doe wonderfully inrich and fatten all manner of barren grounds, as namely the haire of beastes hides: The haire of beastes hides. (which for the most part Tanners and Glouers doe cast away) this thinly spread on the lande, and plowed in, brings euery yeare a fruitefull croppe. Againe, if Braken or Ferne be layed a foote thicke vpon the Earth, and then a layer of earth vpon it, then another layer of Braken, and another layer of earth, and so layer vpon layer till the heape be as bigge as you intend it, and so left to rot all the Winter folowing, there cannot be a better meantire for any arable ground; for you shall vnderstand that the earth will so rot the Braken, and the braken so soake into the earth, that they will become both one rich substance. And herein you shall note, that whensoever you would haue any substance (of what condition soeuer) quickly to rot and turne to meature, that the onely way is to mixe it with earth, and that will in short space bring it to rottenesse. Now this Braken So rot dung quickly. and

and earth thus rotted, you shall lay vpon your land as you do your ordinary dung of cattell, and then sow your seed being steeped, as aforesayd.

Of Malt-dust.

Next, your Malt-dust which is the sprout, come, smytham, and other excrements of the malt, is an excellent meane for arable land, allowing three quarters thereof for an acre, and strowing it vpon the land after it is plowed and ready to be sowne.

Of rotten Pelchards and garbage

There is another meane, which albe it is not plentifull euery where, yet in some places it is, and not inferior to any meane before spoken of, and that is your rotten Pelchards after the oyle is taken from them, and the carcases cast to the dung hill, this layd on the land, and plowed in, bringeth corne in great abundance, and no lesse doth the carcases and garbage of all kind of fish whatsoeuer, especially of sea-fish.

Of bloud offalls.

Lastly, the bloud, entrails and offall of any beasts is an excellent meane for any kind of graine, plant, or tree, but especially for the vine, for to it there is no nourishment of greater force or efficacie: also, if this bloud be tempered with Lyme it is exceeding comfortable for graine, and destroyeth wormes, and other creeping things which hurt corne, onely it must not bee applied presently, but suffered for a little time to rot, least the too much heate thereof might scorch and doe hurt to the roote of the corne: this meane is to be laid on the earth when you sow it, and so the seede and it harrowed or plowed in together, which done after the order of good workmanship, there is no doubt of the increase.

CHAP.

CHAP. II.

How to enrich for Corne, any barren, rough, wooddy ground being newly stubbed vp.



IF you haue any barren wooddy ground which is newly stubbed vp, and that you would conuert it to arable, you shall then take a great quantitie of the vnderwood, or worst brush-wood which was cut from the same, and in the most conuenientest place in the field, as in the midst, or neere there about, you shall frame it into a broad hollow pile, and then couer it all ouer with great sodds of earth, which done, set fire on it, and leaue no part thereof (either wood or earth) vnburnt, then take those ashes and spread them all ouer the field, Wood-ashes. so farre forth as you meane to plow vp, then with a good strong plow fallow the ground as deepe as you can, and so let it rest till it be almost *May*, then take either Ferre, Stubble, Straw, Heath, Furses, Sedge, Beane stalkes, or any other wast growth, take I say either any one, or more of these, or all together, as you stand possesst of them, and burne them to ashes, Ashes of Ferre, Straw, &c. and therewith couer your land the second time, and then in Summer stirre it, within a Moneth after soyle it, then at the beginning of October, or a little before, plow it againe, and sow it with Rye the first crop, and you shall see the increase will be very plentifull, the next yeare you may sow it with Wheate, the third yeare with Barley, the fourth yeare with Pease, Lupins, Fetches, or any other Pulse, and then beginne with Wheate againe; for it is credibly said, that

F this

this manner of dressing these barren, woodie grounds, shall maintaine and keepe the earth in good heart and strength (in the worst places) for the space of foure yeares; in that which is any thing reasonable for the space of fixe yeares; and where there is any small touch of fertility for the space of sixteene yeares; of which there are dayly experiences in *France*; about the Forrest of *Ardenne*, and some with vs here in *England* in many woodie places.

CHAP. 12.

The manner of reducing againe, and bringing vnto their first perfection all sorts of grounds which haue bene ouerflowed, or spoyled by salt-water, or the Sea-breach, either arable, or pasture, as also the enriching or bettering of the same.

The difficulty
of this lab. ur.



Here is nothing more hard or difficult in all the art of husbandry, then this point of which I am now to intreat, as namely, the reducing and bringing vnto their first perfection all sorts of grounds which haue bene ouerflowed or else spoyled by the Sea-breach; and bringing in of too great abundance of salt water, which to some men (of little experience, and free from those dangerous troubles) may appeare a matter very sleight; and the wound most easie and curable, and the rather, because in all my former relations and demonstrations touching the bettering of euery severall sort of ground, I do apply as one of my chiefest ingredients or simples, by which to cure Barrenesse, Salt land, Salt weeds, Salt water, Salt brine, Ashes,

The vertues
of Salt

es, Lime, Chalke, and many other things of salt nature, as indeed all measures and marles whatsoeuer must either haue a salt quality in them, or they cannot produce fruitfulnessse) so that to argue simply from naturall reason, If salt be the occasion of fruitfulnessse and increase, then there cannot be much hurt done by these overflowes of the salt water, but that it should rather adde a fattening and enriching to the ground then any way to imponerish it, and make it incapable of growth or burthen. But experience (which is the best Mistresse) shewes vs the contrary, and there is nothing more noysome and pestilent to the earth then the superabundance and too great excessse of saltnessse; for according to our old Prouerbe of *omne nimium*, that too much of euery thing is vitious: and as we see in the state of mans body, that your strongest poysons, as *Antimony* or *Stibium*, *Coloquintida*, *Rubarb*, and the like, taken in a mederate nature, are most healthfull, and expell all those malignant qualities which offend the body, and occasion sicknessse; but taken in the least excessse that can be diuised, they then (out of theyr virious and naughty qualities) do suddenly and violently destroy all health, and bring vpon the body inuitable death, and mortality; so is it with this matter of salt, and the body of the earth, for as by the moderate distributing thereof, it correcteth all barren qualities, disperseth cold and naughty vapours, and yeeldeth a kinde of fatnesse and fruitfulnessse, whereby the Seede is made more apt to sprout, and the ground more strong and able to cherish the same till it come to perfection, through the sharpe, warme, and dispersing qualitie thereof; so being bestowed in too great abundance and excessse, whereby the earth is surfeited, and as it were ouer-

The vices
which come
from Salt.

The abuse of
Salt in excessse.

come and drowned vp with too much of this naturall goodnesse and helpfull quality, then all his proper vertues turne to egregious vices, as his wholsome sharpnesse to a fretting, gnawing, and destroying greedinesse; his comfortable warmenesse to a consuming and wasting fierinesse, and his gentlenesse in disperſing, to an infectious and venomous pullution, by the ioynt qualities of all which together, the ground is made neither fitte to receiue any thing from the hand of the Husbandman, nor yet to produce or bring forth any thing of it selfe, because euery good quality is abused or expelled, and nothing but vnnaturalnesse and sterility left; which like a Serpent lodgeth in the ground and will suffer no good thing to haue society with it; and these are the effects and mischietes which are occasioned by these Sea-breaches or inundations of the salt water.

Offak moderately vſed,

No overflow of salt water good for grasse.

It is certaine that although in the salt marshes, where the Sea commeth in at certaine times and onely washeth or sprinkleth the ground all ouer and so departeth, there is neither want of grasse, nor yet complaint of any euill quality in the grasse, yet it is most certaine that no overflow of salt water how little or moderate soeuer, can be truly said to be wholesome for any kind of grasse ground whatsoeuer; for grasse is compounded of an infinite world of plants and simples, and most of them of severall natures and qualities, so that if it giue nourishment to one, yet it may destroy tenne; neither doe I finde it by any of the Ancients simply and properly applied vnto the grasse grounds, but first vnto the arable, in which hauing spent its primary or first strength vpon the seede (which is a great and greedy deuourer or eater vp of the strength and

and farnesse of the earth) it then prepares and makes the ground more able and fit to bring forth grasse, and that of the best and finest kind, for although the Masters of the Salt marshes finde a singular and rare profit in those grounds for the feeding, breeding, fattening, and sustaining of their great flocks of sheepe, which vpon these salt grounds, they say, will neuer rot or perill by that vniuersall disease, yet must they not impute that to the great quantity, goodnesse, or any growth in the grasse, but to the salt which they lick vp in the grasse, and to the salt qualitie of the grasse, which is not onely an antidote or preseruatiue against that noysome and pestilent mortality, but also a delightful and pleasant food where in those cattell take more contentment then in any other thing whatsoever; so that I must necessarily rest vpon this conclusion; that as but moderate washing and overflowing of salt waters are no certaine or particular great helpe vnto grasse grounds, especially if they be applyed therunto, and to that purpose simply at the first, without any other preparatiue or working by a former meanes, as by tillage, digging, deluing, or the like; so the exceeding great inundations or Sea-breaches which lye long soaking and sinking into the earth must needs be a certaine, infallible, and almost incurable cause of barrennesse, eating, spoiling, and consuming the very rootes of all manner of plants, trees, and growthes, by which the ground is made vterly incapable of generation or bringing forth: and therefore where these great inundations or overflowings cannot bee either preuented or auoyded, but as the seasons of the yeare they doe and must hold their courses, there I would not wish any man to bestow eytther his labour or his

The grounds
of the salt
marshes.

A true cause
of barrennesse.

Where this
annoyance
is incurable,

Where it is
curable.

about 100
of 100
of 100

cost, for it is losse of time and losse of substance: but where it is to bee preuented or auoyded by industry, or that those ouerflowings or Sea breaches come and happen by casualty or change, as either by the vnaturalnesse and superabundance of tydes being driven in by the violence and impetuofnesse of outragious winds, or by any pегlect or breach in the Sea wall, or other mishaps of the like nature, which happeneth some times scarce once in an age, at the most not above once or twice in many yeares; in these cases there is most certaine remedy, and the grounds so spoyled and wasted, may by art and industry be againe reduced and brought to the former perfection and goodnesse; nay many times amended and freed from many faults and sterile qualities, to which it was either naturally addicted, or else by chance and accident grew thereunto, by continuall wearying and imployment, without rest, or refreshing by the artificiall meanes of wholesome measures, or other strengthnings which ought to bee applied before those faults grew into extremities.

The manner
of the cure,

One contrary
helps another.

Now touching the cure of these grounds which are thus worne out, decayed, and made barren by these inundations of salt water, the owner thereof is first to draw into his consideration, that as the malignity and euill quality of the earth is growne by too much fretting, gnawing, and wasting of the salt, so it must be allayed and qualified by a quite contrary condition, which is freshnesse: the contrary then to salt water, must of necessity be fresh water, so that you are to cast about in your iudgement, and by the view, situation, and leuell of the ground (which for the most part can haue but little difficulty in it, because these grounds vpon which the Sea thus breaketh, must euer be the lowest of all other, so that a true descent coming

ming vnto it, and a true ascent comming from it, there is no hardnesse to conuey any water course thereunto) looke how to bring a freshnesse which may conquer & overcome this saltnes, and that must therefore be fresh water, which by channels, ditches, furrowes, sluices, and the like, you may bring from any fresh riuer, spring, pond or other fresh water course (though remoued some distance of miles from the place to which you would conuey it) to the very place to which you desire to haue it, and with this fresh water you shall wash and gently drown ouer so much of your spoiled ground as you shall be able reasonably to deale with all in other costs & labours for that yeare; and if you haue plentifull store of fresh water, then hauing (as I said) drown'd it ouer gently, about foure inches, or halfe a foot deepe, you shall so let it lie two or three daies, then draine away that water by the help of back ditches, or by sluices made for that purpose, which if the situation of the ground deny you, and that there is no such conuenient conueyance, then you shal in the lowest part of the ground (either ioyning vpon some other spoiled ground, or vpon the Sea-wall or banke) place a Coy, which may either cast the water into the other ground, or else ouer the wall and banke into the sea; and hauing thus drained away the first water, you shall then open your sluices of fresh water againe, and drowne your ground ouer the second time, and do in all things as you did before, & thus according to the plentifulnes of your fresh water, you shal drown your ground, or at least wash it ouer with fresh water twice a weeke before the beginning of the Spring, and if the salt water haue laine long, or be but new departed, then you shall vse your fresh water for some part of the Spring also.

The watering
with fresh
water.

How to draine
away the fresh
water.

How oft to
drowne the
earth.

Now some may obiekt vnto me here (and it is a matter altogether vnlikely (that in some of these

Helpes it fresh
water be wan-
ting

Whether brack-
ish water be
wholesome.

places where these inundations and breaches are, it is impossible either to finde fresh water, or to bring fresh water vnto them, because all the springs for many miles about being made naturally brackish, and the rivers by the infection of the salt tides, hauing lost the greatest part of their sweete freshnesse; the question now resteth, whether these brackish waters are wholesome for this purpose, I or no? To this I must needs answer, that they cannot in any wise be good for these spoiled grounds, because the earth naturally is of an attractive and drawing condition, sucking and gathering vnto it selfe any thing that is of a sharpe, sweete, or sower taste, and especially saltnesse, so that being couered with those brackish waters, it will draw from them onely their salt (of which it hath too much already) and no part of the freshtnesse which should qualifie and amend it: therefore if either your ground be thus situated, or your necessities thus vsupplied, it is better that you rather forbear this labour of washing or drowning your earth (though it be the first, the speediest, and surest cure of all other) then by watering it with infinite and vnwholesome waters, rather increase the mischiese, then any way delay it.

The first time
of plowing, and
the obseruation
therein.

How mixe
saiths,

After you haue watered your ground (if it be a worke impossible to be attained vnto) or otherwise neglected it (being a thing not possible to be found) you shall then about the latter end of *March* plow vp all the ground with a good deepe stich, turning vp a large furrow, and laying it into lands, raise them vp as much as you can, and make them round, then looke of what nature or temper the earth is, as whither it be fine sand, rough gravel, stiff clay, or a mixt earth, or any of these contraries together: If it be a fine sand, either white, red,

browne, it matters not whether, then you shall take any clay earth which is free from these salt washings, being of a meane or small stiffnesse, and likewise of as meane and little richnesse, which being digged out of some banke, pit, or other place where least losse is to be had, you shall carry it in tumbrels or carriages to the new plowed ground, and there first lay it in heapes as you doe measure, then after spread it all ouer the land, and being dry, with clotting beetles breake it as small as you can possibly, for this hungry clay being of no rich or fat condition, will so sucke and draw the salt into it, that it will take away much of the euill quality, and mixing his tough quality with the loose condition of the sand, they will both together become apt for fruitfulnessse and generation.

If the soyled ground be a rough hard grauelly earth, then you shall mixe or spread vpon it the best and richest fresh clay you can get, or if there be any such fruitfulnessse neere about you, then with a good b'ew marle, for that is the coolest and the freest, and will the soonest draw out the salt from the grauell, and giue it a new nourishment, whereby any seed shall be fed and comforted which is cast into it.

The mixture
for Grauell.

If the spoyled earth be of it owne nature a stiffe and tough clay, which is but seldome found so neere the sea shoare, then after the plowing, you shall mixe it, and couer it ouer with the freshest and finest sand that you can possibly get, for that will not onely separate the salt from the clay, and take away the naturall toughness and stiffnesse of the same, which hindereth and suffocateth the tender sproutes, so as they cannot easily get out of the earth, but also by lording a gentle warmth, wil assuage the cold quality of the clay,

The mixture
of Clay.

and

and make it bring forth most abundantly.

The mixture of
mixt earth.

Lastly, if the same spoiled earth be of a mixed quality, then you shall looke whether it be binding or loosening, if it be binding, then you shall mixe or cover it with fine fresh sand, if loosening, then with a reasonable rich and tough clay, for so you shall bring it to an open and comfortable temper, making it able both to receive, cherish, and bring forth the seede; which before either too much wet, or too much driness did stifle and bind vp within the clots and mould, so as it had no strength to beare himselfe through the same.

The second
plowing.

When you haue coured your lands with this mixture, you shall then plowe it ouer againe before *Midsummer*, turning the new layd earth vnder the old earth, and as soone as that labour is finished, you shall then lade forth your measure or compasse vnto it, in which you are to haue a great care what measure you elect for this purpose, for it is not the richest and fattest measure (as your Pigeons dung, or Pullens dung, Lime, Chalke, or ashes, your Horse dung, your shouelings vpon high-ways, your beasts houses, your horne shavings, your Hempe-weede, or any other weede which groweth neere the seydge of the sea, neither your Oxe or Cow-dung, though of all before named, that is the best which doth the most good vpon these spoyled grounds, because they haue all in them a strong quality of saltnesse or sharpenesse, which will rather adde then diminish the cull quality of the earth, but instead of these you shall take the mudde of dried bottomes of Lakes, Ponds, and Ditches of fresh water, and the moysture or wetter such mudde or bottomes are, the better it is, or Straw which is rotted by some fresh water course, raine, or the like, by no meanes

Election of
measures.

The best measure.

that

that which is rotted by the urine or stale of Horse or cattell; for that is the saltest of all other; or you may take any weedes which you see grow in fresh Rivers, Ditches, Ponds, or Lakes, especially those which grow at the bottomes of Willow, Sallow, or Osier trees; or you may take the old ragges of woollen cloth, or any other measure which you know to be the woldest or freest; and with any of these or all of these together, you shall very plentifully cover your ground all over, and immediatly vpon the couering or laying on, see you presently plow it, land after land; for to giue it any long respire after it is spread, the Sunne out of his attractive and strong nature will exhale and draw out all the vertue from your measure, and so spoyle much of your labour.

The ordering
of the mea-
sure.

The third
plowing.

When you haue thus measured it, and plowed it, you may then let it rest till *Michaelmas*, at which time you may plowe it the last time, and then sowe it with the strongest and hardest Wheate you haue, of which the white Pollard is the best, and there is no question but if it be safe from a second Inundation, your croppe will both be plentiful and rich, and also acquit and pay largely for all your former charges. The second yeare you neede but onely plow it as aforesayd; and then sow it with good Hemp-seed, and be assured you will haue a braue crop arise thereof; then the third yeare you shall plow it as flat as you can, still throwing it downe and not raising it vp at all, and then sowe it with the best Oates you can get, according to the nature and strength of your countrey, and be sure to harrow it well, and to breake euery clot, and make the mould as fine as is possible, and the next yeare after your Oates, lay it for grasse, and I dare be bold, it will beare reasonable mea-

The last plow-
ing, and the
sowing.

The second
yeare sowing
and third.

Laying the
earth for
grasse.

dow,

Of Grazing.

now, yet would I not have you this yeare to preferre it for that purpose; but rather to graze it with sheepe or Cattell, especially sheepe, of which I would have you lay on good store; for it matters not how neare or close to the ground they eate it; for the next yeare it will be come to the fulnesse of perfection; and be as profitable or more profitable ground then ever it was, and then you may apply or accomodate it for what use you please, either arable meadow, or for continuall grazing.

And thus much touching the manner of reducing againe, and bringing vnto their first perfection, all sorts of groundes which haue beene overflowed or spoyled by Salt water, or the sea breaches; whether it be arable or pasture; as also the enriching or bettering of the same.

Another way to enrich barren pastures, or meadowes, without the helpe of water.



If your Barren pastures or meadowes be so seated that there is no possible means of washing or drowning them with water, you are then onely to restore and strengthen them by the efficacie of manure or soyle, without any other helpe, and this may diuerse wayes be done, as by those manner of manurings which I haue formerly treated of. But to goe a better and briefer way to worke, and more for the ease and capacity of the plaine Husband-man, when soeuer you shall bee posselt

possess of these barren pastures, if the barrenesse proceede from sand, or grauell, then some Husbonds vse to ^{Clay measure} measure the pasture ouer with the best clay they can get, first laying it in heapes, then spreading it, and lastly with clotting beetles breaking it into as fine dust as they can get it, and this labour they commonly performe as soone as they can after Haruest when the latter spring is eaten, and the earth is most bare, but if the barrenesse proceed from an hungry, cold and dry clay, then they measure it with the best moorish ^{Moorish earth.} blacke earth which they can get, or with any moyst measure whatsoeuer, especially and about the rest, when the soyle that is digged out of olde ditches, ponds, or dried vp standing lakes, and this earth must be layde plentifully vpon the ground in measure heapes, as aforesayd, that is to say, first in great heapes, then after broken and disperfed ouer the whole ground, and lastly broken into small dust, and mixed with the swarth of the ground, and this labour as the other is generally performed after the Haruest as a time of most conuenience, and giuing the earth a fit respire to sucke in the strength and comfort of the new earth, and also hauing all the Winter after with his frosts, snowes, and showers, to mellow, ripen and mixe together the one earth with the other, and doubtesse this is a most exceeding good Husbandry, and not to bee refeld or carpt against by any knowing or sound iudgement; onely it is not the most absolute, or best of all wayes whatsoeuer, but that others may be found somewhat more neare, and somewhat more commodious.

Therefore whensoever you shall be owner of any of these barren pastures, or meadowes, of what nature or condition soeuer the earth be, whether proceeding ^{The best way to enrich pasture or meadow.} from

from grauell, sande, clay, or pestered with any other malignant quality whatsoever, to reduce it to fertility and goodnesse in the shortest time, and to the most profit, about the moneth of *March*, when all pasture grounds are at the barest, and doe as it were remaine at a stand betweene decreasing, and increasing, you shall beginne then to leide forth your measure for the refreshing of these Earths, and the measure which you shall carry vnto these grounds, shall be the soyle of strectes within Citties or Townes, or the parings and gatherings vp of the high-ways much beaten with trauell, also the earth for two or three foote deepe which lieth vnder your dung-hill when the dung is removed, and carried away, for this is most precious and rich mould, and is not alone excellent for this vse, but also for the vse of Gardens, for the strengthening and comforting of all sortes of tender plants, and for the vse of Orchards, for the comforting both of olde and young Trees, when at any time their Roote are bared, or otherwise when there groweth any m. like or decreasing.

The soile of
the strectes,
or high-ways.

Earth vnder
dung hills.

To enrich gar-
dens, or orch-
ards.

The mould of
willow in trees.

You shall also take the fine earth or mould which is found in the hollow of olde Willow trees, rising from the roote vp, almost to the middle of the tree, at least so farre as the tree is hollow, for then this there is no earth or mould finer or richer.

Of all of these measures, or of any one of them, or of as many as you can conueniently get, you shall leide forth so much as may very plentifully measure and couer your ground all ouer; you shall first lay it on the earth in reasonable bigge heapes, that the Sunne may not exhale the goodnesse out of it; and then at your best leasure, and so soone as you can conueniently; you shall

you shall lay
it on the
earth in
reasonable
bigge heapes

shall spread it vniuersally ouer the field, dispersing it as equally as you can, vnlesse your field be more barren in one place then in another, which if it be, then you shall lay the greatest p^{er}centy where it is most barren, and the lesse where you find the greatest fertility, yet by all meanes see you scant not any place, but giue euery one its due; for to doe otherwise would shewe much ill Husbandry.

Now it is the vse of some Husband-men, that what mould or earth they lade out from sixe of the clocke in the morning, till three of the clocke in the after-noon, that they make their Hinds spread in the euening before they goe to Supper, and questionlesse it is a very good course, and worthy to be imitated of euery good Husband.

The spreading
of mould.

After you haue laide forth your mould, and spread it all ouer your pasture or meadow, then you shall make some boyes, gerles, or other poore people, to picke and gather vp all the stones, stickes, or other vnecessary matter which might happen to be led forth with the mould, and to picke and lay the pasture so cleane as is possible, which done, it is to be intended that yet notwithstanding this ground will lye exceeding rough, both in respect of the clottes of earth, which will not easily be broken, as also in respect of natural toughnesse of these rich moulds which at this time being digged vp in the wet, will not easily be separated or dissolved; and therefore when you haue finished the labours before sayde; you shall let the clottes rest till the Sunne and weather haue dried them, then after a good ground shower (observing to take the first that falleth) you shall harrow all your ground ouer after this manner.

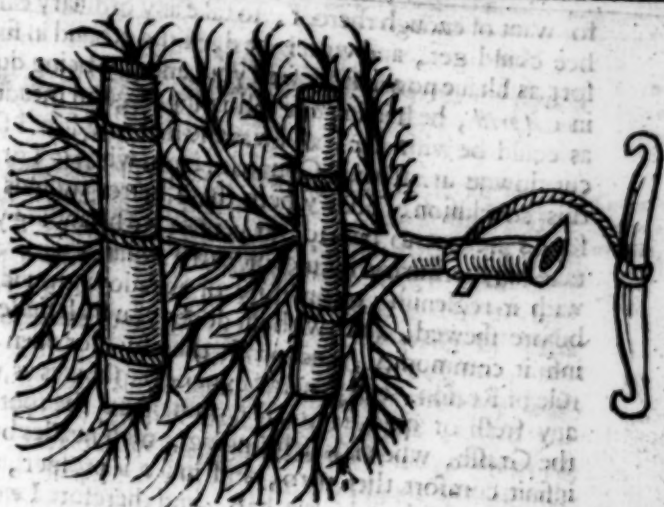
Of stone gathering.

You

A new way of
Harrowing.


You shall cut downe a pretty bigge white thorne-
tree, which we call the Hawthorne tree, and make sure
that it be wonderfull thicke, bushy, and rough growne,
which done, you shall plash it as flat as you can, and
spread it as broad as you can, and those branches or
boughes which of necessity you must cut in sunder, you
shall againe plash and thrust into the body of the Tree,
binding them with cords or wiches so fast there, that
they may by no meanes scatter or shake out, and if any
place appeare hollow or thinne, and cannot come to lye
hard, firme, and rough vpon the ground, then you
shall take other rough bushes and thrust into the hol-
low places, and bind them from stirring, also till you
haue made your plash full and equall in all places, and
that all the roughnesse may as in a flat leuel equally
touch the ground, when you haue thus proportioned
your Harrowe, you shall then take great logges of
wood, or peeces of timber, and with ropes bind them
on the vpper side of this rough Harrowe, that the
poyse or weight of them may keepe the rough side hard
and firme to the earth, and then the Harrow will carry
this proportion or figure.

To



To the bigge end of this Harrow, you shall fixe a strong rope, with a Swingle-tree with Treates, Coller, and Hames, and one Horse is fully sufficient to drawe it round about the pasture or meadow, so with this Harrow you shall Harrow the ground all ouer, and it will not onely breake all the hard clots to a very fine dust, but also disperse them and driue them into the ground, and giue such a comfort to the tender rootes of the young grasse then newly springing, that it will double and treble the increase. And for mine owne part, this experience I my selfe haue scene vpon an extreme barren pasture ground in *Middlesex*, where none of these good moulds or soyles could be got, but the Husband was faine to take all the rubbish and couerse earth, euen to the very sweepings of his yaid, and

Of rubbish and
sweepings.



for want of enough thereof, to take any ordinary earth hee could get, and with it be drest the ground in such sort as I haue now shew'd you, and this being done in *April*, he had in *June* following as good meadow as could be wishe for, and was the first meadow I saw cut downe in all that Countrie: from whence I draw this conclusion, That where these better moulds or soyls are not to be had, if yet not withstanding you take any ordinary mould or earth whatsoeuer, and with it replenish your pasture or meadow grounds as before shewed, that without doubt you shall finde an infinit comodity, and profit thereby, for euen the rule of Reason, and generall experience shewes vs, that any fresh or quicke mould comming to the roote of the Grasse, when it is in springing, must needes be an infinit comfort therunto, and make it prosper, and shoote vp with a double hast, and therefore I would haue every husbandman to make much of the rubbish, sweepings, parings, and spyrlings of his house and yard, as also of shourlings vp of the high wayes, back-lanes, and other such places, and especially, if they bee any thing clayie, or morish, or sandy mixt with any other soyle, for of them he shall finde great vse, according to the husbandrie and experience already described.

Lastly, there is not any thing that more enricheth pasture or meadow ground than Soape ashes, being thinly scattered and spread ouer the same, and this labour would euer bee done at the latter end of *April*, for then grasse is beginning to shoote vp, and at that time finding a comfort, the increase will multiply exceedingly.

CHAP. 14.

*How to enrich and make the most barrenest soyle to
beare excellent good pasture or meadow.*



O speake then of the bettering and en-
riching of these barren earths, and re-
ducing them to good pasture or mea-
dow, it is to be vnderstood, that there
are but two certaine wayes to com-
palle and effect the same; namely. water or mea-
sure.

Two wayes
to enrich
earthes.

You are then when you goe about this profitable
labour to consider the situation of the earth, you
would conuert to pasture, and to elect for this purpose
the best of this worst earth you can finde, and that
which lyeth lowest, or else that which is so descending,
as that the bottome thereof may stretch to the lowest
part of the continent, for the lower that such grounds
lie, the sooner they are made good, and brought to
profitt: Next you shall consider what burthen or grasse
it beares, and whether the grasse be cleane and entire
of it selfe (which is the best and likeliest soyle to be
made fruitful) or else mixt with other worke growths,
as thistles, heath, broome, or such like, and if it be
burthened with any of these naughty weedes, you shall
first destroy them by stubbing them vp by the rootes,
and by burning the vpper swarth of the earth with dry
straw mixt with the weedes which you shall cut from
the same, then it shall be good for certaine night is both
before the first and latter Spring to sowe you sleepe
vpon this ground, and that not in a scant manner, but
very plentifully, so as the dung of them may couer

ouer all the earth, and their feete trampling vpon the ground, may not onely beate in the dung, but also beate off all the swarth from the earth, that where the folde goeth, there little or no grasse may be perceiued, then whilst the ground is soft, and thus trampled, you shall sow it all ouer with Hay seeds, and then with your flatte boorde beetles beate the ground smooth and plaine, which done, you shall then strow, or thinly couer ouer the ground with the rotten staddies of Haystacks, and the moyst bottomes of Hay-barnes, and ouer that you shall spread other strong measure, of which Horse-dung, or Horse-dung and mans ordure mixt together is the best, or for want of such, either the measure of Oxen, Kine, or other beasts; and this measure also you shall spread very thicke vpon the ground, and so let it lye till the Grasse come vp through the same, which Grasse you shall by no meanes graze or feede with your cattell, but being come to the perfectnesse of growth, you shall mow it downe, and although it will bee the first yeare but short and very coule, yet it skilleth not, for the ensuing yeares, shall in the profite, and bring forth both so good grasse, and such plenty thereof, as reasonably you can require: for this is but the first making of your ground, and alteration of the nature thereof, neither shall you thus dresse your ground euery yeare, but once in twenty, or fortie yeares, hauing plenty of water to relieue it. When therefore you haue thus the first onely prepared your ground by destroying the barren growth thereof, and by measuring, sowing, and dressing it, you shall then carefully search about the highest parts of the ground, and the highest parts of all other grounds, any way neigh

neighbouring round about it, and somewhat above the leuell thereof. to see if you can finde any Springs in the same, (as doubtlesse you cannot chuse but doe, except the ground be of more then strange nature,) and the heads of all such Springs as you shall finde, you shall by gutters and channels draw into those ditches which shall compasse your meadow ground about, observing euer to bring the water into that part of the meadow ditch which euer lyeth highest, and so let it haue a currant passage through the ditches downe to the lower part thereof, and so into some Lake, Brooke, or other channell, and in this sort you may bring your water a mile or two: Nay I haue seene water brought for this purpose, three or foure miles, and the game thereof hath quit the charge in very plentifull manner.

Of watering
grounds.

But if you cannot finde any Springs at all, nor can haue the helpe of any Lake, Brooke, River, or other Channell of mouing water, (which is a doubt too curious, as being cast beyond the Moone) you shall then not onely cast ditches about this your meadow ground, but also about all other grounds which shall lye about, and that in such sort, that they all may haue no passage but into the vpper part of the meadow ditch, so that what raine soeuer shall fall from the skie vpon those earths, it shall be receiued into those ditches, and by them conueyed into the meadow ditch: and to augment the store of this water, you shall also in sundry parts of those vpper grounds which are about the meadow, in places most conuenient, digge large Ponds, or Pits, which both of themselves may breed, and also receiue all such water as shall fall nere about them, and these Ponds or Pits being filled (as in the Winter

Helpes in the
watering.

time necessarily they must needs be at euery glut of raine) you shall presently by small draines made for that purpose, let the water out from them into the ditches, and so into the meadow ditch, and so stopping all the draines againe, make the Ponds or Pits capable to receiue more water.

When and
how to water.

When you haue thus made your ground rich with water, and that you see it flow (as in the winter time necessarily it must) in plentifull manner through all your ditches, you shall then twice or thrice in the yeare, or oftner, as you shall then thinke meete in the most conuenientest places of the meadow ditch, stop the same, and make the water to rise about his bounds, and to ouerflow and couer your meadow ground all ouer, and if it be a flat leuell ground, if you let the water thus couering it to lye vpon the same the space of foure or sixe daies or a weeke, it shall not be amisse; and then you may water it the seldomer. But if it lye against the side of a hill, so that the water cannot rest vpon the same, then you shall wash it all ouer, leauing no part vamoistured, and this you shall doe the oftner, according as the weather shall fall out, and your water grow more or lesse plentifull.

The best season for watering.

Now for the best season or time of the yeare for this watering of meadowes, you shall vnderstand, that from *Albhaloride*, which is the beginning of *November* (and at which time all after growth of meadowes, are fully eaten, and cattell for the most part are taken vp into the house) vntill the end of *April* (at the which time grasse beginneth to spring and arise from the ground) you may water all your meadowes at your pleasure without danger, if you haue water enough at your pleasure, and may spend or spare at your will; yet

yet to doe it in the best perfection, and whereby your ground may receiue the greatest benefit; you shall vnderstand that the onely time for the watering of your meadowes, is immediately after any great fluxe of raine, falling in the Winter any time before *May*, when the water is most muddy, foule, and troubled, for then it carrieth with it a soyle or compasse which being left vpon the ground, wonderfully enricheth it, and makes it fruitfull beyond expectation, as daily is seene in those hard countreyes where almost no grasse growes but by this industry: And here you must obserue, that as you thus water one ground, so you may water many, hauing euer respect to beginne with the highest, and so let the water passe out of one ground into another vntill it come vnto the lowest, which commonly is euer the most flat and leuell, and there you may let the water remaine so long as you thinke good (as was before shewed) and then let it out into other waste ditches or riuers. And here you shall know that this lowest ground will euer be the most fruitfull, as well because it lieth the warmest, moystest, and safest from stormes and tempests, as also because what soyle or other goodnesse this ouerflow of water, or the raine washeth from other grounds, it leaueth vpon this, and so dayly increaseth the fertility, from whence you shall gather, that at the first making of these meadow grounds you may bestow lesse cost of measure and other charges vpon this lowest, flat, leuell ground, then on the higher: and so by that rule also obserue to bestow on the highest ground and the highest part of the highest ground euer the greatest abundance of measure, and so as you shall descend lower and lower, to lay your measure thinner and thinner, yet not any

part vterly vnfurnished and void of Compasse, yet as before I said you are to remember that these meadow grounds neede not this much vfe of meazure (ha- uing this benefite of water, and the first yeares dressing as was shewed in the beginning of this Chapter) aboue once in twenty yeares; nay it may be not aboue once in a mans life time.

And here also is to be considered, that the water which commeth from Clay or Marle grounds, being thicke, muddy and pudly, is much better and richer then that which commeth from sand, grauell or pibble; and so runneth cleare and smooth, for that rather doth wash away and consume the goodnesse of the ground, then a- ny way adde strength thereunto.

CHAP. 15.

Of the enriching and dressing of barren grounds, for the vse of Hempe or Flaxe.

Grounds ill
for Hempe
or Flaxe.



You shall vnderstand there are two sorts of grounds which out of their owne na- tures vterly refuse to beare Hempe or Flaxe; that is, the rich stiffe blacke clay, of tough, solid, and fast mould; whose extreame fertility & fatnesse giueth such a surcharge to the increase of the seede, that either with the ranknesse, it runneth all into Bun and no Rind, or else the seede being tender, and the mould sad and heauy, it burieth it so deepe therein, that it can by no meanes get out of the same, but lies choaked and consumed without profit, the other is the most vilde and extreame barren ground, which by reason of the climate wherein it lies, is so exceeding sterile and vn- fruit-

fruitfull that it will neither beare these seeds, nor any other good seede; and of these two soyles onely I purpose in this place to intreat, for with such soyles as will naturally and commodiously beare these seeds, I haue nothing to doe, in that I haue sufficiently written of them in mine *Englisch Husbandman*, and *Englisch Housewife*, which are Bookes onely for good grounds, but this for all such grounds as are vtterly held without cure.

To beginne then with the stiffe blacke Clay, which al beit be very rich for Corne, is most poore for these ^{Blacke Clay} seeds, when you would reduce and bring it to beare ^{for Hempe,} Hempe or Flaxe, which neere vnto the Sea Coast, ^{See.} is of greater price and commodity then Corne any way can be, especially adioyning vnto any place of fishing, in respect of Nets and other Engines, which is to be made of the same, and which being dayly wasted and consumed, must likewise be daily replenished: You must first with a strong plow, fit for the nature of such land, plow vp so much ground as you intend to sow Hempe or Flaxe vpon, about the middest of *May*, if the weather be seasonable, and the ground not too hard: if otherwise, you must stay till a shower doe fall, and that the earth be moistned, then shall you hacke it and breake the clottes in small pieces, then with the salt Sea-sand, you shall sand it very plentifully, but if that be not to be gotten, and that you be very well assured of the naturall richnesse of the earth, you shall then sand it with the best red sand you can get or find neere vnto you, and vpon euery Acre of ground you thus sand with fish sand, you shall sow three bushels of Bay salt, and then plow vp againe the earth, sand and salt rogether, which would be done about the latter end of the yeare, as after *Michaelmas*,
and

and so let the ground rest till seede time; at which time you shall first before you plow it, go downe to the low rockes on which the sea beates, and from thence with draggess and other Engines, gather those broad leaved blacke weedes, which are called Orewood, and growe in great tufts and abundance about the shore, and these Weedes you shall bring to your Hempe-land, and cover it all over with the same, and then you shall plow it againe, burying the weeds within the earth.

And herein is to be obserued, that in any wise you must lay these weedes as wet vpon the land, as when you bring them out of the sea, provided still that you adde no other wet vnto them but the salt water, for so they are of all soyles or measures whatsoeuer, the onely best and fruitfullst, and most especially for these seedes, and breed an increase beyond expectation.

When you haue thus plowed ouer the ground, you shall then hacke it againe, then sowe it with either Hempe or Flaxe-seede, which you please, and after it is so sowne, you shall then harrow it (and not before) and you shall be carefull to harrow it into as fine mould as you can, and this mould is likely to runne fine enough, as well by reason of the fertility, as also of the mixture; yet what clots you cannot breake with your Harrowes, those you shall breake with your clotting Beetles, and such like tooles: then after the first great shower which shall fall after your sowing, you shall runne ouer your land thus sowne with your backe Harrowes, that is, with a paire of large Harrowes, the wrong side turned vpward, to wit, the teeth turned from the earth, and the backe towards
the

the earth; and if neede be, you shall lay vpon the Harrowes some indifferent heauy peece of wood which may keepe the backe of the harrowes closer to the ground, and so goe ouer all the earth, and lay it as smooth and light as is possible, without leaving the smallest clot that may be vnbroken. Now if the ground be sowne with Hempe, you shall not thinke of weeding it at all, because Hempe is so swift a grower, and such a poyson vnto all weedes, that it ouer runneth, choaketh, and destroyeth them; but if it be sowne with Flaxe or Lyne, which is a much tenderer seede, and bringeth forth more tender leaues and branches, then you shall watch what weedes you see spring vp, and in their first growth plucke them vp and cast them away till you behold your Flax or Lyne to be growne about the weedes, and then you may let it alone also. For after it hath once gotten height, it will not be ouergrowne with weedes.

Now touching the other soyle, which through the extreme barrennesse thereof, refusing to bring forth any good fruite at all, you shall in all points dresse it as you drest your plaine clayes, described in the second Chapter of this Booke, beginning at the same time of the year that is then appointed, or (if more necessary occasions hold you) if you begin later it shall not be amisse, and then at Michaelmas you shall plow it ouer the second time, and manure it with the sea weedes, and so let it lye at rest till March (which is seed time) and then plow it againe, and manure it with the sea weedes againe, and after the plowing you shall hacke it, and if in the hacking you find the earth stiffe and tough, then you shall harrow it before you sow it, then sow it and harrow it againe, breaking the earth so small and laying it so

Making of ill
earth bears
&c.

so smooth as possible you can, vsing the helpe both of the clotting beeres and all other tooles which may be available for breaking the earth, and making the mould as fine as any ashes, then after the first great shewer of raine, perceiuing the ground to be well moysted, you shall instead of the backe harrowes (which vpon this earth may be too light) take the great rouler which is described in the Booke of the *Engl. sh Husband man*, being a great round peece of timber of many squares, drawne either by horse or oxen, but a single horse is best, both in respect of much treading the ground, as also for the swift going away or drawing of the same: for the swifter it is drawne, the better it breaketh the ground, and the lighter it leaueh the mould: and with this rouler you shall runne ouer and smooth your ground very well, leauing no clots vnbroken, and so let it rest.

Weeding.

As for the weeding of this ground, you shall not respect it at all, for naturally it will put y^e down weeds, the very ground of it selfe being a very great enemy thereunto, nor shall you neede to dresse this ground in the forme before sayd, aboue once in eight or ten yeares: onely euery seed time when you plow it (as you shall not neede to plow it at any time, but seede time onely) you shall before the plowing, couer or measure the land with the sea weed before spoken of, which will giue strength enough to the ground, without any other assistance.

CHAP.

CHAP. 16.

*of the manner of stacking of all kind of Graine or Pulse with
greatest safety, and least losse.*



IN These barren and hard countries, of which I have formerly written, all sorts of buildings are exceeding costly and scarce, both in respect of the climate, which is commonly most extreme cold, mountainous, and much subiect to storme and tempest, as also

through the great want of Wood and Timber, which in those hard soyles doth hardly or neuer prosper; and therefore in such places building must bee both small and decre, so that it will be very hard for the Husbandman to haue house-rooms for all his Corne, but that of necessity he must be enforced to stacke much, or the most part of his corne without the doores, which albeit it be a thing very vsuall in this Kingdome; yet is it in many places so insufficiently done, that the losse which redounds thereby (partly by the moysture of the ground, which commonly doth rot and spoyle at least a yard thickeesse of the bottome of the stacke next the ground, and partly through Mice, Rats, and other vermine, which breedeth in the stacke, doe eat and deuoure a great part thereof; as also through many such like negligent causes) is greater then a good Husband may with his credite be guilty of, or a profitable Husband will by any meanes suffer to be lost so negligently.

To shew then the manner how to stack or mow your corne without the doores, in such sort, as neither the ground

ground shall rot it, nor these vermines destroy it, nor any other losse come to it by way of all Husbandry, you shall first cause foure peeces of timber, or foure stones to be hewed broad and round at the nether ead, like the fashion of a Sugar-loafe, or this figure.

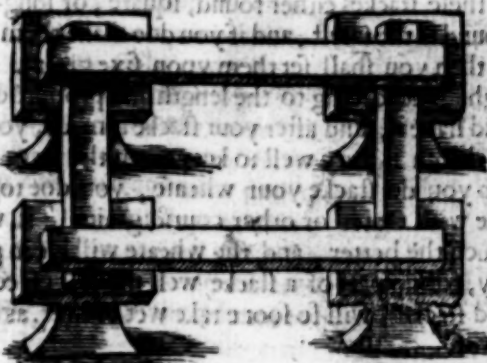


And these peeces of wood or stone shall be in length three foote or there about, and in compasse or bredth at the bottome, two foote, or a foote and a halfe, and at the top not above one foote: these foure peeces of wood or stone you shall place in your stack-yard, or other convenient place neere your thrashing-floore, and you shall place them foure square, of an equall distance one from another, then you shall cut out foure smooth boardes of two inches and a halfe thicke at the least, and fill threethree square every way, and these boardes you shall lay vpon the heads or narrow tops of these stones or peeces of timber, according to this figure.

Then



Then shall you take strong ouer-lyers of wood, and lay them foure-square from one board to another, according to this Figure.



And then vpon those ouer-lyers you shall lay other smaller poles close eue by another, and then vpon them you shall mow or stack all your Corne, whether it be Wheate,

Wheate, Barley, Oates, Peale, or any other kinde of graine, and be sure if you make your stacke handsome and vpright, which consisteth in the Art and workmanship of the workman, you shall neuer receiue losse in your corne, for the raising of it thus two or three foote from the ground will preſerue it from all moyſture or hurt thereof, and the broad boards which couer the foure ground poſts will not ſuffer any mice or other vermine to aſcend or come into the ſame.

Now for the manner of laying your corne into the ſtacke, you ſhall be ſure to turne that part of the ſheafe where the eares of the corne lye euer inward into the ſtacke, and the other which is the ſtraw end, you ſhall euer turne outward, and by that meanes you ſhall be aſſured that no flying fowle, as Pigeons, Crowes, and ſuch like, can do you any hurt or annoyauce vpon the ſame: Laſtly, you ſhall vnderſtand, that you may make theſe ſtackes either round, ſquare, or long-wiſe, yet round is the ſaſeſt, and if you doe make them long-wiſe, then you ſhall ſet them vpon ſixe ground poſts, oneight, according to the length and proportion you would haue it, and after your ſtacke is made, you ſhall then thatch it very well to keepe out the wet; alſo if when you do ſtacke your wheate, you doe top your ſtacke with Oates or other coarſe graine, it will be ſo much the better, and the wheate will lye in greater ſafety, for no part of a ſtacke well made, eſpecially a round ſtacke, will ſo ſoone take wet or hurt, as the top thereof.

CHAP. 17. *The diseases and imperfections which happen to all manner of Graine.*



Albeit the manner of stacking and laying
vp of Corne or Graite in the forme be-
fore shewed, may to every one giue
an assurance for the safe and profitable
keeping thereof as long as it endureth
therein, and abideth in the eare, yet

because diuers necessities may compell the Husband-
man to thrash out his Corne, as either for present vie of
Straw, Chaffe, Garbidge, or other commodities need-
full vnto him (as the season of the yeare shall talke out)
I thinke it most necessary in this place to shew how all
manner of Graine and Pulse, of what nature soeuer they
most safely and profitably be kept from all manner of
annoyances, or corruptions whatsoever; being a worke
of their vility and goodnesse; that not any belong-
ing to the Husbandman, doth exceede it: Nor shall it
be sufficient to shew the offences and diseases of Graine
with their cures, and healthfull preseruations; whilst
it is in the Husbandmans possession, but also whilst
it is in the earth, and at the mercy of cold, heate moist-
nesse or drinitie, and not onely subiect to the malignant
influences of Starres and Planets, with the increasing
and decreasing of the Moone and her operations; but
also of diuers other hurtfull vermins; as birds, wormes,
pismires, doctes, snails, moales, and other such
like; some whereof consume and deuoure the graine
ere it sprout: others in sprouting when the kettell is
rotten and turned to sweete substance, and others after

it is sprouted by deuouring the first tender leaues before they haue strength to appeare aboue the earth, being as it were but soft white threads not changed into the strength of greene, because the aire and sunne hath not yet looked vpon it.

Crowes, Pigeons, and Birds.

To begin then with the first enemies of corne or graine: after it is throwne into the earth, there is none more noysome then Crowes and Choughs and other finaller birds, which flocking after the seeds-man, will in a manner deuoure and gather vp the graine as fast as it is sowne, for according to the old saying, *That many hands make light worke*; so many of their mouthes (being creatures that euer fly in flocks together) and their much simbleness in deuouring, soone robbe the earth of her store, and deprive the labouring Husbandman of very much profit, and the graine which these creatures doe most conuulse, is all manner of white corne, as Wheate of all kinde, Rye and Oates, as also Hempe-seed, Lin-seed, Rapeseed and such like. Neither are they onely offensive during the time of sowing, but also after it is sowne and couered, digging it with their strong bills out of the earth, and so making the waste greater and greater.

The cure,

The prevention or cure for this euill, is diuers, as the affections of people, and customes of Countreys doe instruct them, for some (especially the French men) vse when they sow these graines or seeds, first to sprinkle it with the dregs or lees of their bitterest oyles, which when these deuouring fowles doe taste, they refuse to doe any further hurt: Others vse to sow Pigeons dung or Lime with their seed, which sticking vnto the graine, the vnsauourinesse thereof will make

the

the fowle cast vp the graine againe, and denie to doe further hurt: But forasmuch as these medicines cannot euer be had, nor are euer wholesome for euery ground, the onely best and latest meanes to preuent this euill, is to haue euer some young boy with bow and arrowes to follow the seeds man and Harrows, making a great noise and acclamation and shooting his arrowes where he shall see these deuourers light, not ceasing, but chasing them from the land, and not suffering them at any time to light vpon the same, and these seruants are called Field-keepers or Crow-keepers, being of no lesse vse and profit: (for the time) then any other seruant whatsoever, nor is it sufficient to haue these Field-keepers for the bare time of seeds onely whilst the graine is in sowing, but he shall also maintaine them till such time as you see the graine appeare about the earth, which for Wheat or Rye, because they are Winter-seeds, and so longer in sprouting will aske a full moneth, for all other seeds which are sowne in the Spring or Summer, a fortnight is full sufficient; and this Field-keeper shall not faile to be in the field an houre before Sunne in the morning, and so continue till halfe an houre after Sun-set in the evening; for at the rising and setting of the Sunne, is euer done the greatest mischiefe, for then are all creatures most eager and hungry: and though the indurance may promise much paine and trouble, yet questionlesse the labour to any free spirit, is both easie and pleasant.

Also if your Field-keeper in stead of his bow and arrowes doe vse to shot off a Musket, or Harquebush, the report thereof will appeare more terrible to these enemies of corne, and the profit thereof will be a great deale more: for a shot or two of powder will

Additions.

saue more corne then a weekes whinoping and shouting; onely you must obserue that your Field-keeper vse no Bullet or Haile-shot, for so he may turne scarring to killing. Now touching the destruction which these creatures make of corne after it is stackt vp; by tearing of the thatch, and digging holes and piss therein, to prevent that, you shall cause the Thacher to scatter vpon the Thatch great store of ashes of any kind or else Lime, that as the Pigeons or Crows teareth vp the straw, the Lime or ashes may sparkle into their eyes and nares which they will not endure: as for those parts of the Stack which cannot be thatched, as the sides and ends, vpon them you shall pricke diuers scar-crows, as dead crows, or dead Pigeons, or any other rags, or the shape of a man, made either of thumbe-rops of hay or straw, or else some old cast away apparell stopt with straw, and so fixed on the stack; also in this case you may vse Clap mills, or such like toyes which make a great noise: But to conclude the best prevention for these creatures (if you want abilitie to maintaine a Field-keeper) is to take long lines of packthread, and in them to knit diuers feathers of diuers colours, especially white ones, & with little stakes so to fasten them ouer the Corne, that with euery breath of winde the feathers may dance and turne aboute, and the nearer that these Blinks or scaries come to the ground (when the corne is new sowne so much the better it is, least the fowle finding a way to creepe vnder them, begin not to respect them, so that a hand or two from the ground is sufficient, provided that the feathers and scars haue liberty to play and moue.

But if it be to saue Corne in the ripening, that is to say,

say, a little before it be reapt, when the eare begins to harden, or when it lieth in single sheafe vpon the land, for then fowle and birds doe as great milchiefe, as at any other season, it shall then be fit that you raise these lines or scarres vpon higher stakes, so as they may play as much about the eares of corne as before they did about the earth: and amongst these scars thus made vpon lines in sundry parts of the field, you shall vpon other stakes, place many other bigger scars, as dead crows, pies, gleades, pigeons, or such like; as also the proportions of man formerly shewed you, or any ragges of cloth being blacke, fowle, and vgly like bakers milkins, and then this there is no safer way for the defence of graine or corne from these birds, and such like.

The next greate deuourers or consumers of graine Of Pismires are Pismires or Ants, which although it bee but a little creature, yet it is so labourfome, that the graine which they carrie away or destroy by eating, amounteth to a greate quantitie, and the mischiefe which these little Vermines doe, is after the corne is couered in the ground, and before it sprout, for they creeping in at the little chinckes of the earth, and finding the corne, either drag it out, or eate it, so that it cannot grow, and the graine which they most hurt, is all manner of white corne, especially your finest and smallest Wheat, for the skin or hull is thinnest, and the kinnell whitest and sweetest: also to barley they doe much hurt, especially, that which is fullest and best, and likewise to Rye, Hempe-seede, Lin-seede, and Rape-seede; as for Oats, because it is double hull'd, and also your great hole straw wheat and Polard wheat which is thicke huld, their hurt is not so much to them, and vnto pulse

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nothing

nothing at all, because they are too heavy, too thicke skinned, and too bitter in taste.

The Cure.

The best cure or preuention for these Pismires is to search your Corne-fields well, especially vnder hedges and old trees, and on the tops of Moale hills, and if you finde any beds or hills of Ants or Pismires, presently after Sun setting with hot scalding water to drowne the beds or hills, or with wet straw and fire to make such a smoake vpon them as may smother them to death, also if you meazure your Corne-lands with ashes, lime or salt sand, you shall be well assured it will neuer breed Pismires.

Of Dores.

Next, vnto these, your Dores, or great black Clocks are vehement destroyers of all kinde of Corne both white Corne and Pulse, whilest it lieth dry in the earth, and before it sprout, for after it beginneth to rot, they doe no more touch it, and these Dores destroy it in the same manner, as the Pismires doe, by creeping in at the small creuies of the earth, and finding the graine doe as long as it is dry feed thereon, and though they are no hoarders, or gatherers together of the graine, keeping it in heapes in dry places as the Pismyres and other vermine doe, yet they are great feeders thereon and that continually, besides they will euer chuse out the fullest and best Corne, leaue the leaner, whereby they doe the Husbandman a double iniury, as first to deuoure, and then to deuoure but the best onely.

The Cure.

The cure or preuention for these Dores, or blacke Clockes, is in Seed-time to make great smoakes in your corne-fields, which will presently chase them from thence, for they are the greatest enemies that may be to all manner of smoake: but if that be not sufficient, then

then immediately before you sow your Corne, you shall very lightly sow your land with sharpe Lyme, and whensoever the Dore shall finde the smell or taste thereof, presently he will depart, or if he eate of the graine that toucheth the Lime, it is as present poyson vnto him, and there he dyeth.

After these, your field-Rats and Mice are very vehement destroyers of all manner of graine or seeds before they sprout, especially all sorts of wheate, and all sorts of pulse, because for the most part thole kinde of graines in many soyles are sowne vnder furrow, and not harrowed, so that the furrowes at first lying a little hollow, these vermines, getting in betweene the earth and them, will not onely deuoure and eate a great part of the graine, but also gather together great heapes thereof into their nests, as is often seene when at any time their nests are found, some hauing more, some lesse, according to their labours: And albeit in other soyles where the graine is sowne about furrow, and so harrowed in and laid much more close and safe, they cannot doe so much hurt as in the former, yet euen in these they will with their feet digge out the corne in great abundance, and though in lesse measure, yet doe hurt that is vn sufferable; so that to conclude, neither Rye, Barley, Oates, nor any other smaller and more tender leeds are free from their annoyance and destruction.

Now the cure and preuention for these Field-Rats Mice are diuers, according to the opinions of diuers authors, and diuers of our best experienc't Husbandmen: for some vse in the Dog-dayes, or Canicular dayes when the fields are commonly bare, to search out the holes and nests of these Rats and Mice, which

Of field-Rats
and mice.

The Cure.

are easily knowne, being little round holes in the earth made so round and artificially as if they were made with an Auger, no bigger then the body of the Creature that was to lye in it: and into these holes they vse to put a few Hemlock Seeds, of which when the beast tastes it is present death vnto them: Others vse to sprinkle vp. on the land, *Hellicore* or neefing powder mixt with Barley meale, of which the Mice and Rats will greedily feed, and it is deadly bane and present death vnto them. Lastly, (and which is the best medicine) if you take a good quantity of ordinaie Greene glasse beaten also to powder, and as much Copporas or vitriol beaten also to powder and mixe them with e. urse honey, till it come to a paste, and then lay it in the holes and most suspicious places, and it will neither leaue Rat nor Mouse about all your fields, but sodainely destroy them.

Of wormes.

The next great destroyers of Corne and Graine, are wormes, and they destroy it in the sprouting, then when the ground hath rotted it, and the white or milkie substance breaking open the vpper huske, shooteth forth in little white threds at both ends, vpon which whilest it is so moist and tender the worme feedeth extreamly, and so deuouring vp the substance or sperme, is the cause the Corne cannot grow or get out of the ground, and these wormes being as it were the maine citizens within the earth are so innumerable that the losse which is bred by them is infinite.

The Cure.

Now the cure or preuention for these wormes is diversly taken: for some Husbandmen vse, but onely to strike into the plow rest, and vnder the lowest edge of the sheldord certaine crooked spikes of iron of great payles halfe driven in, and turned backe againe, with which

which as the plow runnes tearing in the ground, and turnes vp the furrow, those pieces of iron kill and teare in pieces all such wormes as are either within or vnder the furrowes that the plow casts vp, and this is sure a very good husbandly practice, but not sufficient for the destroying of such a secret hurtfull vermine which is so innumerable, and lies so much concealed; therefore more curious husbands vse besides this helpe of the plow, to take Oxe dung and mixe it with straw, and then to burne it vp in the land, making a great smoake ouer all the land, immediately before you plow it for seed, and it is thought that this will kill all the wormes which lie so high in the earth, as to hurt the Corne; Others vse before they make either the mixture or the smoake to wet the straw in strong Lye, and then adding it to the dung, the smoake will be so much the stronger, and the wormes killed the sooner, or if you sprinkle strong lye vpon your seed before you sow it, there is not any worne that will touch the graine after: Also, if you take hempe and boile it in water, and with that water sprinkle your seed before you sow it, not any worne will come neere to touch it.

Yet it is to be obserued in this rule of wetting your seed-Corne, that by no meanes you must wet your seed-Rye, for it is a graine so warme and tender that it will neither endure cold, wet, nor stiffe ground, insomuch that the plowman hath a Prouerbe, that Rye will drown in the hopper, that is to say, it must neither be sowne on wet ground, nor in a wet day, since present shewes are apt to destroy it: lastly, it is thought that oft plowing of your ground in the wane of the Moone is a very good meanes to destroy wormes. Touching that practice which many vse, to gather the worms from

Of Rye now
to be wea.

from their lands at Sun-rise, in bright dewie mornings, and Sun-set when the wormes couple about the earth, I hold it more fit for small gardens, then large Corne-fields.

Of Snayles.

The next great destroyers of Corne are Snayles, and they destroy it after it is sprouted, feeding vpon the tender white threds and fions which start from the seed and would rise above the earth, being the stemme or stalke on which the eares should grow (were it not deuoured and eaten vp by these Snayles, and such like vermine) as soone as it begins to peepe vp, or as it were but to open the earth, whereby it is driuen back and forced to die in the earth: for these creatures sucking vpon the tender sweetnesse, deprive it both of life and nourishment.

The cure.

The cure and preuention for this cuill, is to take the soor of a Chimney, and after your Corne hath beene sowne a weeke or ten daies, or within two or three daies after the first shower of raie which shall fall after the Corne is sowne; you shall sow this soor of the Chimney thinly over the land, and not a Snayle will endure to come thereon: Others vse (especially in *France* and those more fertile Countries) to take common Oyle lees, and after the Corne hath beene sowne and is ready to appeare about ground, to sprinkle it all over the Lands by which meanes no Snayle or such like creature will endure to come neere the same.

Of Grasshoppers.

The next great destroyer of Corne is accounted the Grasshopper, and he also destroyeth it after it is sprouted and appeareth about the ground, as the Snayle doth, but somewhat more greedily, for he not onely feedeth on the tender white strings, but vpon the first Greene leaues that appeare also; by which meanes the Corne is not able

able to spring or bring forth a stemme or stalke to beare the eare vpon ; or if it do put forth any, yet it is so small, weake and wretched , that the eare growing on the same, is withered and leane, and the graine dry and blasted, and no better then Chaffe ; nor is there any Corne that escapeth the destruction of the Grashopper, for he generally feedeth on all : first, on Wheat & Ric, because they are the earliest, then on the Barlie & Oates, and lastly on Pulse, vpon whose leafe and blossome he feedeth whilest the first is sweet & pleasant, or the other Greene.

Now the cure or prevention for these Creatures, is according to the opinion of some Husbandmen, to take ^{The cure.} Wormewood and boyle it well in water, till the strength of the Wormewood be gone thereinto, and then with that water in the moneth of *May* to sprinkle all your Corne over when the Sun is rising or setting ; and not any Grashopper will come neere or annoy the same. Others vse in stead of Wormewood to boile Century, and to vse the water thereof in the same manner as a foresaid, and finde an equall and like profit in the same, but is most certaine that any bitter decoction whatloeuver, vsed and applied as aforelaid, will not leaue one Grashopper about your Fields, for any bitterness is such an enemy vnto them, that they cannot liue where they feele any taste thereof.

The last offence of liuing Creatures belonging to Corne or Graine, are Moales, which not onely feed vpon it after it is sprouted and spindled by eating vp the roots thereof, and so consequently by killing the whole Corne : but also by their digging and vndermining of the earth, doe roote vp the Corne and destroy it in most wonderfull manner, for where they make their haunts, or are suffered to digge, there they will destroy almost

almost halfe an Acre in a day, neither make they choice either of Ground or Graine, for all grounds and Graines are alike, if the ground be not to wet, or subiect to inundation or overflowes (as for the most part corne grounds are not) for aboute all things Moales cannot endure wet ground or earth of too moist quality.

The Cure.

Now the best cure or preuention against these creatures, is to find out their trenches and passages which are most plaine and easie to be knowne by the turning vp of the new earth, and digging crosse holes in the same, to watch either the going forth, or the cumming backe of the Moale, and when you see her cast to strike her with an iron forke made of many graines, as eight or sixe at the least, and so to kill and destroy them; which still is so generally knowne amongst Husbandmen, that it is become a trade and occupation amongst them, so that it needs no further description, and the rather in as much as for three or foure pence a score, you may haue any ground clenfed of Moales whatsoeuer.

Now there be some others which haue not this art of killing or catching of Moales, which onely doe take brimstone and wet stincking straw, or anie thing else that will make a stincking smoake, and putting fire thereto smoake all the places of their haunts, and by that meanes drive them all cleane away from the cornelands: many other practises they haue, but none so good, certaine, and probable as these already declared.

Thus far I haue spoken of those offences which proceede from liuing creatures, I will now intreate of these which come and grow from the Influence of the heavens, being malignant vapours which striking into the earth, doe alter the sweete and pleasant nourishment thereof, and change it into bitter esse and pottent esse, where-

Offences from
th influence
of the heavens.

by the Corne is either flaine outright, withered and made leane and vnkindly, or else the kernell turned to a filthy blacknesse, being bitter dry, and dusty, like vnto smoake, which the Husbandmen calleth smutthesse or mildewing commeth another way, as namely by ouer ranknesse, or too much fatnesse of the earth, and this happeneth most commonly onely to Wheat, for if blacknesse happen to any other Graine, it cometh of blastings or other malice of the Starres, for ranknesse of the ground in Barley, Rie, or Oates, onely makes them lie flat to the ground, the stalke not being able to support the multiplicity of the eares, and so by that meanes the graine wanting his true nourishment, grows light, withered, and of no validity; now that this is most easie to be found out, the ranknesse of the growing Corne, rising as it were in close bundles together, and the deepe blacknesse of the greene blades will with small travell shew you.

Of smutthesse
nesse and
mildew.

This to cure and preuent, it shall be good before you sow your Graine, to sow your land lightly ouer with chalke, for that will abate his ouer ranknesse.

The Cure.

There be other malignant qualities which proceed from the influences of the Heauens, or rather from the qualities of the Planets or Elements which doe many dangerous hurts vnto Corne, as namely the Haile, the Lightning, the Thunder, and the Planet-stroke or Blasting, for all which the ancient Husbandmen haue suggested seuerall Cures, as namely for the Haile, to plant the white Vine, or sticke the branches thereof in the Corne-field. For the Lightning, to close a hedge-Teade in an earthen pot, and burying her in the Corne-field, or to hang vp the feathers of an Eagle, or a Scale skinn, or to plant Lawrell therein: For the

Additions.

Thunder

Thunder, to ring Bels, to shoot off great Ordnance, or to burne stinking weeds in the Corne field: And for Blasting, to take the farre horne of an Oxe, and mixing it with dung, to burne it in the corne-field, or to take the branches of the Bay tree, and to plant them in the corne-field: But in as much as all these, and many other the like, smell rather of coniuration, charme, or exorcisme, then of any probabilitie of truth; I will neither here stand much vpon them, nor perswade any man to giue further credit vnto them, then as to the vapours of mensbraines, which produce much many times out of meere imagination; and so I will proceede vnto those things which are of farre greater likelihood.

Of frosts.

The next euill which happeneth vnto corne or graine, is that which cometh by frosts and sharpe nipping colds, which staruing the root, and binding vp all nourishment, maketh the corne dry, wither, and neuer prosper; and then the violence of the frosts, here is nothing more bitter to plants and seeds, for for euer Rasor-like it cutteth the veines and sinewes in pieces; and as sharpe needles pricketh the heart of euery growing thing, for as the fire which is most hot, when it rageth, burneth and consumeth all things, so the frost which is most cold when it continueth, starueth and choaketh or stiflith whatsoever it embraceth.

The cure.

Now the cure or preuention for those euils which doe happen to Graine by these greate Frosts, is as some Husbandmen suppose, to cover the land ouer when it is sowne, with ashes, others spread straw or rotten litter vpon their corne, and not any of them but is sufficient to preuent the worst injury that the frost can doe.

The

The

The most malignant qualitie which offendeth
graine, is myst and fog, which being naughty vapours <sup>Mists and
fogges.</sup> drawne from the infected parts of the earth, and falling
vpon the corne, doe not onely make the graine leprous,
but also infecting the better earth alter the kindly
nourishment thereof, and as it were distilling corrup-
tion in the veines, makes all that depend thereupon most
leprous and vnwholesome, & thereby altereth the qua-
lity, quite turning sweetnesse into bitternesse, fulnesse
into emptinesse, and goodnesse into badnesse, to the
great losse of the Husbandman, and the much disrepu-
tation of the ground.

Now the cure and preuention of this euill, accor-
ding to the opinions of all the best Husbandmen, is to ^{The cure;}
take weeds greene, the twigs of brambles, and other
brush wood, wet straw or any such like stuffe, and bin-
ding them in great bundles, to put fire thereto, making
a great and violent smoake, and then taking the aduan-
tage of the wind, to walke vp and downe the field and
smoake it, which is thought a certaine remedy to take
away those inconueniences which happen by violence
and poyson of these mysts and fogs.

Now to conclude the diseases and infirmities
which happen to Corne whilst it is in the field, there
is not any formerly spoken of more dangerous or of vil-
der qualitie then the reaping, mowing, or gathering
in of Corne, wet or too greene, and vnhardned, for
such moisture when the corne is either sheeffed vp close
together, or stackt or mowed vp, forthwith gathereth
heat, and either setteth the Corne on fire, or else the
moisture being of lesse quantity, and not apt to flame,
yet it corrupteth the graine and straw, and breedeth
a stinking mouldinesse or rottennesse aboute it, so that
the

Corne reapt
wet.

the graine either becomes dung and durt, or at least so stinking and vnflauory that it is good for no vse or purpose, as is daily seene where carelesse husbands gather in their graine without respect or gouernment, making the old Prouerbe good, that hast euer brings wast.

The cure.

The cure and preuention of this euill, is the well husbanding and managing of the harvest, as first with a carefull and well iudging eye to looke vpon your Corne, and to know by the hanging downward of the eare (looking as it were backe to the ground) and by the hardnesse of the Graine, whether it be ripe or no; then to looke into the cleannesse of the Corne, as whether it be full of greenes, as grasse, weeds, and such like: or cleane of it selfe without any mixture: if you finde there be many weeds mixt with it, then you may reape it so much the looner, though the kernel be not so well hardened as you would wish, and about all things haue a care neuer to sheare Corne in the raine or wet, no not so much as with the mornings or euenings dew vpon it, but euen in the heate and brightnesse of the day. Then hauing reapt your Corne so full of grasse and weeds, you shall by no meanes sheafe it, but spreading it thinne in the Sunne, let the grasse wither all that day; which when you perceiue to change colour and grow dry, then bind it vp in sheafes, and let it lie single a day, that the winde and Sunne may get into it, and dry the greenes more sufficiently; then lay it in stouckes of sixe or eight sheafes apeece, and in those stouckes, and turne the eares so inward that the other bigger ends may defend them from all raine, wet or dew that may fall vpon them; then a day or two after, lay them in stouckes of twenty or of foure and twenty sheafes apeece, and in those stouckes let them take a sweat, then breake them open

open in a bright Sunne shine day, and letting the aire passe thorow them to dry them, forthwith leade the graine home, and house it or stacke it in such sort as was shewed in the former Chapter, and be sure the graine thus ordered and dried can never take hurt: but if the season of the yeare fall out so extraordinary euill, and full of wet, that by no meanes you can get your Corne dry home (which although it be seldome scene, yet it is possible to be scene) in this case you must bring it home as well as you can, and hauing your Kilne well ordered and bedded, you shall lay as many sheaues thereon, as it can containe, and turning and tossing them ouer a very gentle fire, by slow degrees dry them very perfectly as neere as you can, with no greater a heate then that which the Sunne giueth, and then mowe and stacke them vp at your pleasure, for the ayre will sweeten them againe, and take away all smell of smoake or other annoyance: onely obserue, not to stacke them vp whilst the fire or heate is in them, but when they are cold, and so they will be as sweet as may be.

Now it is not amisse that I speake here a word or two of washe Corne, or the washing of Corne; True it is (as before I hane written) that all sorts of Wheat whatsoeuer are subiect, either by the ranknesse of the ground, blasting, or else mildewing, to a kind of filthy sooty blacknesse, as is already shewed; and this sooty Corne is taken two wayes, generally and particularly: generally, if the whole land be stricken, and no corne saued, but all spoyled, which is called mildewed: or particularly, where but some certaine eares are stricke, or some certaine part of the graine, as when it is black at both ends, yet full and sound in the midst, and

Of Corne
washe.

this is called smutcht Corne, being disfigured in part, and not in all. This smutcht Corne which is stricken here and there, if the blasted eares be not culled out from the other, (which to doe is an husbandry exceeding good and very worthy) when it cometh vnder the flayle, the dust of those blacke blasted eares will so foule all the rest of the corne, that it will looke black and ill fauoured, and so become vnteruiceable and vnmaketible, for the blasted corne is both bitter and vwhole some: In this case you must of force wash this corne, and you must doe it in two or three waters, till you see all the blacknesse quire gone; which done, then draine away your water cleane, and laying the corne on faire window-cloathes, or couerlids, lay it in the heate of the Sunne, and so dry it againe till it be so hard that it will grind: But if the time of the yeare will not serue for the Suns drying it, then you shall dry it on a kiene with a very soft and gentle fire, and then coole it in the ayre to recouer the sweetnesse againe, and then the corne is as seruiceable as any other, onely for seed it will by no meanes serue, both by meanes of the blasting, which makes the kernell imperfect at both ends, where it should prout, as also the too much drying thereof, by which it is so much hardened that the ground hath not strength to resolue it, therefore it is the office of euery husbandman when he chuseth his seed corne, to eschew by all meanes this washt corne as a graine that is lost in the earth, and will by no meanes grow.

to know
washt corne.

Therefore that you may know washt corne from all other corne, and so not to be cozened by any deceit in the ill husbandman, you shall take it vp into your hand, and if the corne looke bright, cleere, and shining, being

being all of one entire colour without change or difference, then be sure the corne is vnwasht and perfit.

But if you finde it looke whiter at the ends then in any other part of the corne, and that the whiteresse is blacke and not shining, so that there is a changeable colour in the corne, then be assured that the corne is washt and then by no meanes apt for seed or increase.

Againe, put three or foure graines into your mouth and chaw them, and if then the taste be sweet and pleasant, and grind mellow and gently betweene your teeth; then is the corne not washt, but if it haue a bitterish, or fishy raw taste, and grind hard betweene your teeth, or with much roughnesse, then hath the corne beene washt and dried againe, and is not good for seed: also when Corne is more then ordinarily moist, or more then ordinarily dry, both are very ill signes, and shew either imperfect Corne, or imperfect keeping, for the best and good Corne indeed euer holdeth an indifferent temperature betwixt drinesse and moisture.

CHAP. 18.

How to keepe all manner of Graine, either thrasht or vnthrasht with least losse the longest time, and how to preserue it from all infirmities and vermine in the house or garner.



To proceed to the keeping and preseruing of Corne and Graine, it is to be vnderstood that it is to be done two severall wayes; that is to say, in the eare and out of the eare, in the stacke when it is ioyned with the Straw and Chaffe, or in the Garner when it is clenfed and dressed.

Keeping of
corne two-
fold.

Keeping
Corne in
the eare or
in the chaffe.

Touching the keeping of Corne in the Eare or in the Stacke, there is no better or safer way then that already described in the sixteenth Chapter, being free from all offences whatsoever that can come to hurt it.

Now there be others that cut off the eares of their Corne, and then put them into great Chests or Hutches of wood, (such are very frequent and much in vse in *Ireland* and other Countries where waire rageth) and so keepe it sweete and good many yeares: Others vse to beate it out of the Eare, but not separate it from the Chaffe, and then laying a leare of the Strawe more then a foote thicke, to lay a good thicke leare of the thresht Corne, then another leare of Strawe, and so a leare of thresht Corne, and thus lay leare vpon leare, till you haue made vp your Stack, in such proportion as you shall thinke convenient; and this will keepe all kind of Corne, or Graine, or other seeds, sound, sweete, and fit for any purpose, at least a dozen yeare, or more, as some haue supposed, without either too much drying, withering, moistening or molding; and sure this is a very excellent way for the storing vp of much Corne in a very little roome, and may as well be dore with corne as with straw: onely it is not to be done in Barne nor House, because Mice, Rats and other kinde of Vermine will worke much destruction thereupon, but on a Stacke or Houell made and proportioned in such forme as was shewed before in the sixteenth Chapter, and so it will stand safe without all annoyance, as long as it shall please the owner to keepe it; sure I am it will last thus fully twelue yeares, yet some Authors affirme it will last fifty yeare, but that is a space of yeares beyond my tryall,

Touching

Touching the keeping of Corne after it is thrasht and drest, it is diuers wayes to be done, as by stoage or place of leare, as garners, hutches, and such like: by labour and industry, as with the shouell: or else by deuice or medicine.

Keeping of
corne out of
the Eare or
drest.

For Garners, they be made diuers wayes, according to the nature of the Country and custome of the people.

Of Garners.

Some are made with clay and lome troden with haire, straw chopt, and such like: but these are the worst and doe soonest corrupt Corne, for although they are warme, which is a great reseruatiō to Corne, yet they yeeld dust, and from that dust is bred fleas, mytes, weauels, and other vermine which spoile corne, and make it easly rot.

Others are made of stone and lyme, but they are subiect against wet weather, to yeeld forth a moist dew which corrupteth and rotteth corne.

Others are made of Bricke and Lyme, and they are very good against the weauell and other small vermine, but the lyme is sharpe and so consequently very vn-wholesome for all manner of Graine. The best Garner then that can be made to keepe all manner of graine in, is made of plaster, burnt and brought into morter, and so raising it vp with the helpe of small stones hidden and placed in the midst of the wall, to make both the inside, and the outside of the Garner of smooth plaster, no stone being seene but hidden at least two fingers thicke on each side, and all the bottome also must bee made of plaster; for no floore keepeth corne so well, of what kinde so euer it be, and these Garners would be placed as neere as you can to the backes or sides of chimneys, or as neere the ayre of the fire as you can conveniently, for as there is nothing more cold

then plaster, yet it is euer so dry and free from moisture, that with no change of the ayre or weather it relenteth, but keepeth the corne euer in one state of goodnesse, whilst the warme standing thereof is such a comfort in the Winter, and the naturall coolnesse of the thing so foueraigne in Summer, that the graine euer abideth in one state without alteration.

Of hutches.

Now for hutches or great chest, byngs, dry-fats, and such like, they are made of old, dry and well seasoned Oake-boards, plained smooth, and close ioyned and glewed together, with couers and lids made also very close, whereby little or no ayre can come in: Some of these great byngs or hutches made of d. y boards are made open and without couers, but they are not so good, for the ayre cooling the vpper part of the corne, and the midd'e part sweating, breederth corruption, or mustinesse, which hurteith and spoileth the corne: besides, they are somewhat too warme, and thereby make any greene corne apt to corrupt and smell.

Touching the vse of Garners and Hutches, they are principally to keepe Malt after it is dryed, or Barley which is for the vse of bread or meale: and here is to be noted that the best manner of keeping malt, is to keepe it in the come, that is to say, in the dust and other filth which commeth with it from the kilne, as thus, when first you lay your malt on the kilne to be dryed, you know there is at one end a certaine sprout or small threds whch growes from the corne, and it is called the come, which by the rubbing and drying of the malt falls away, and leaues the corne cleane and snug of it selfe, and when you trim and dresse vp your malt for the mill, is winnowed and cleansed away: this you shall preserue and put all together into your Garner.

or

or Hutch, which will so mellow and ripen your malt, that in the spending thereof a pecke will goe further then a pecke and a halfe kept of a contrary fashion, and although some are perswaded that this come or maldust, is a greate breeder of the worme or weuell, by reason of the much heate thereof, being indeed of the purest of the heart of the corne; yet it is not so vnlesse some dankenesse or moysture doe get to the corne, and then it breeds weuells in infinite abundance, and therefore by all meanes, be sure that your garners and hutches doe stand exceeding dry, and then there is no feare of the losse of corne, nor shall you need to dresse or winnow your malt but as you spend it.

Lastly, here is to be nored, that although I here ioyne garners, hutches, chests and byngs together, yet I make them not all of equall goodnesse: for the plaster garner is absolutely the best of all, the close hutch or chest next, and the open byng last; yet any or all sufficient enough to keepe malt, barley, or small seeds, diuers yeares without imperfection.

It is written by some of the anicentest Authors that Wheat hath beene kept in these close hutches or chests sweet, the space of fifty yeares, yet I hold the rule somewhat doubtfull, both because Wheat of it selfe lying so close packt together, is apt to heat and sweat, and that heat commonly turneth to saughtriness, and the sweat to corruption; but that it may thus be preserued from wormes, weauels, mytes and other vermine, breeding in corne, it is doubtlesse and infallible.

Now for the preseruatiō of Wheat, which is the most principall graine, of greatest vse, and greatest price, and therewithall most tender, and aptest to take

To preserve
Wheate.

hurt: the experiments are diuerse as mens fancies and practises haue found out, for some Husbandmen hold opinion, especially the *French* and *Spanish*, that if you take the lees of common oyle (so it be sweete) and sprinkle it vpon your wheate as it lies, either in the garner, or vpon the floore, that it will preserve it from a'l corruption and annoyance whatsoeuer, nor doth it sue wheate onely, but all other manner of graine whatsoeuer; nor doth preserve corne alone from mischiefe, but if corne by casualty be tainted or hurt, it doth recover it againe, and brings it to the first sweetnesse; and if either wormes or weauels be bred in it, the oyle presently kills them, and makes the corne from that mischiefe: as for smaller seedes, as hempe, line and rape, this oyle doth not onely keepe them long and sound, but also feedes and nourishes them, and makes them better, either for the ground, or for vse either in the mill or in medicine. There be others that vse to take chalke, and beate it to powder, and then scatter it amongst their wheate, when they put it into the garner, and haue found that thereby their graine hath bene wonderfully preserved from all imperfection, and surely there is great reason for the same, because the drinke of the chalke drinketh vp the moysture which sweateth from the graine, and is the first breeder of all putrifaction; also it cooleth and asswageth the immoderate heate which is ingendred in the corne, by reason of the packe and close lying together.

Again, there be others which vse to lay great store of worne wood amongst their wheate, which likewise preserveth it from all annoyances, especially from wormes and weauels, as also from Mice, Rats, and such deuouring vermine; neither will the Corne cor-
rupt

rupt or grow faughy, as long as the worrne-wood remaines amongst it: In *Italy* the carefull Husbands vse to take a certaine dry earth or clay, called earth of *Ol-wishus* or *Cernishus*, and this earth they beate amongst their wheate, and then put it into the garner or hutch, and it will keepe it sound and sweete diuerse yeares together; then when they haue occasion to vse it, with small reeing sieues to dresse it from the Corne, and so preserve the dust, which will last and serue you many yeares together, euen almost an age as some haue reported, and is at this day to be seene in many parts of *Italy* and other places.

Againe, I haue for mine owne part scene in the I. lands of the *Azores*, certaine very great and large caues or pits made vnder the earth, of the fashion of a *Spanish* earthen Iarre, that is to say, great and spacious in the midst, and narrow both at the top and bottome, like a brasie pot or great glasse viall, and made as smooth within as may be, and in these caues or pits, they first lay chaffe, and then their thrasht wheate filling it vp full to the top, or within a handfull thereof, which they fill againe with chaffe, and then closing the top with a broad stone, they couer it ouer with earth so close and vnperceivable, that you may walke or trauell ouer it without any suspition; and for mine owne part, I haue my selfe digged vp many of these pits, and found great store of wheate, both in the high-ways, and other most insuspicious places, and surely it is thought, and experience in those places makes it good, that in these caues or pits you may keepe wheat as long if you please as *Pliny* speaketh of, which is an hundred or an hundred and twenty yeares without hurt or putrifaction either of beate, moysture, wormes, weauels

or

or any other vermine whatsoeuer which consumeth or deuoureth Corne, yet how I may recommend this experiment to our nation I am vncertaine, because the much moisture of our climate, and the cold rawnesse thereof promiserh a contrary effect; for the great enemies vnto graine, are violent cold and moisture, and with vs it is very difficult to make any cauerns vnder the earth but they must be subiect vnto both: therefore onely to those which lue in hot sandy Countries high and free from springs or waters, or in dry and rockie grounds, where these mynes or hollow places may be hewed out, as in a maine and firme quarry, I recommend the tryall of this practice, with this assurance, that where the ground is fit for this purpose, as in any of your sand grounds or grauelly earths, as in *Norfolke, Middlesexe, Kent*, and many other sandy climats; or in rockie situations as in *Nottingham, Bath, Bristol*, and such like, you may keepe your wheat, good, sound, firme and free from all annoyances, euen as long as you shall please to keepe it, both without putrification in it selfe, or waste made by other deuouring worms and vermine: but if in a more moist place, as in a clay or other mixt earth which euer is vomiting wet and dewish humours, you are forced to approue this experiment: then you must necessarily lime all your caue or hollow myne within, at least halfe a foote thicke with tyle shred and plaster laid wall-like together, and then the plaster dawbd at least three fingers thicke aboue all, and so you may keepe your Corne as safe and as sound as any hot soile whatsoeuer, but without it your Corne will not endure a weeke without rottenesse, faughtinesse, mouldinesse, and stinking.

To conclude, hauing shewed you all the most appro-
ued

ued & best experiments for the keeping & preserving of wheat, there is none better, or so good as this poore silly plaine one which I will here deliuer: And that is, first (as neare as you can) reape your wheat at the change of the Moone for wheat which is so reaped is seldome or neuer subiect to losse or putrifaction (being gotten dry and in husbandly manner ordered and handled) because that celestially body hath such a power and influence in the growth of Corne and seeds, that as she groweth so they grow, and as she waneth, so they abate and wither.

And truly for mine owne part, in my poore husbandry, I haue made this obseruation, that I haue reaped corne at the beginning of the wane (to mine eye and judgement) great, full, and bold (as the Plow-man calls it) and within few daies after, when it came to thrashing, I haue found it most poore, hungry, and small corne: nor could I giue or find any other reason for the same, but that it was reaped in an ill and most vnseasonable time: for on the contrary part, I haue euer found that corne reaped vpon the Change, being ripe, full, and euery way fit for the barne (& the weather faire & dry aboue head) it hath neuer altered, but kept his first and and perfit goodnesse, so that I cannot chuse but in this case thinke the obseruation of the Moone to be a thing of great effect and validitie, appointed by God as a second meanes for our help and profit: when therefore your corne is thus seasonably and well got, you shall thrash it, winow it, and dresse it so cleane as you can, then carry it vp into your chambers, or lofts appoynted for that purpose, and whose floores by all meanes I would wish to be cast of the best plaster; for boords are too hot, and clay is too apt to breed vermine: One this plaster floore you shall spread your wheat nor aboue

about a foot thicke at the vttermost, and so let it lie : observing once in foure or in five dayes at the most, with a large wooden shouell, to turne the Wheat quite ouer and ouer. And thus doing you shall be sure to keepe it as sweet, sound and good, as when it first came into the barne : for neither can the heate, sweat nor coldnesse offend it, the first being cooled and tempered by the opening and dispersing ; the second dried vp by the ayre which hath free recourse into it, and the last comforted by the labour and tossing of the shouell, casting it vp and downe from one place to another ; and though some curious Husbands may object that this manner of keeping corne dryeth it somewhat too much, and thereby disableth it for some particular purposes, as for seed, and such like ; yet in that they are much mistaken ; for this stirring, and moving of Graine, is not a drying of it, but rather a great comforter and strengthner of it, dispersing backe into the Corne, those wholesome vapours which should doe it good (by way of communication and fellowship with the Graine) and expelling those ill humours which sweating out of it would otherwise confound and hurt it ; so that in conclusion for the true and long keeping of wheat sweet, sound, and perfit, without losse or corruption, there is no way more safe or easie, then this last expressed, being of all other the best, although in shew it appeare sleight and triuiall, as for the most part things of greatest moment in this nature doe ; but to the iudicious Husbandman I referre it, whose aime is at the worth and substance, not at the words and curious glosse, let forth in strange ingredients.

To preserve
Rye.

Touching the keeping of Rie or Masline, or as some call it munck-corne or blend-corne, being part Rie, and
part

part Wheat mixed together, that which preſerueth Wheat will alſo preſerue it, for they are Graine of like nature, onely the Rye is ſomewhat hotter and dryer, and therefore will endure ſomewhat more moiſture; yet to ſpeake particularly touching the preſeruation of Rye, there is nothing better then the Plafter floore, and oft turning; the cloſe Hutch is alſo exceeding good, ſo is the Pipe or Dryſatte, but being once opened, and the ayre entring into the Corne, except it be ſoone ſpent, it will ſoone putriſie, for though in the cloſe keeping it laſt long, yet when it comes to the ayre it quickly receiues taint. Laſtly, for the profit in keeping of Rye, indeed there is nothing better then to ply it and tread it hard into hard veſſels or barrells, wherein ſalt hath been much lodged, or other brine or ſalt matter: provided alwaies, that the veſſels be ſweet and vntainted, no waies ſubieſt to faughrineſſe, or other vnſauourie ſmells, from which there is no preſeruation.

Concerning the preſeruation and keeping of Beanes, which are indeed a more groſſe and fatter graine then any heretofore written of, and out of the fulneſſe of their ſubſtance, more ſubieſt to moiſture and thoſe danliſh humours which corrupt Corne: the carefull husbandman obſerueth two rules; firſt, not to thrash any Beanes or Pulſe, more then for neceſſary vie (as for the Stable or Mill) before it be midde *March*, at which time the Graine hauing taken a kindly ſweat in the Mow, Stack, or Houel, is become ſo dry, firme, and ſolid, that no floore, wall, or other place of leare, can make it relent or giue againe, (except great abuſe and too moyſt keeping) for it is to be vnderſtood, that this ſort of Pulſe or Graine is of it ſelfe ſo exceeding moiſt and apt to ſweat in the Mow, that all Husband-

To preſerue
Beanes.

men

men endeavor by no meanes to house it, or lay it within doores, but seeke to make it vp in stackes and houels without doores; not so much that house- room is wanting, as that the benefit of the Sunne and ayre which peirceth through the same, dryeth and ripeneth the corne in such kindly manner, as maketh it as seruiceable as any other: and indeede, the first inuention of stackes, houels, reekes, and such like, did not spring so much from the want of housing, as from the good and profit which the Husbandman found to accrue to this kind of Graine onely by reason of laying it abroad, for it is certaine, that Beanes and Pease neither grow together, nor ripen together, but put forth their encrease one after another; for you shall see vpon one stalke, bloomes; swads, and ripe cods: so likewise in the gathering of Pulse (when it is reaped from the ground) you shall see some dry and withered, some ripe, some halfe ripe, some absolutely Greene, and as but new in growing.

Now all these must be reipt together, and if you stay them in the field till a Ice of like drinnesse questionlesse the oldest will shake and shed vpon the ground before the youngest be ripened; and what that losse will redound to, euery Husbandman can iudge; so also to house and now vp in close mow, the dry pulse with the Greene, surely the Greene cannot chuse but inflame and heate the dry, and the dry so heated, giue fire to the Greene till both be either rotted or consumed: and hence it came, that expert Husbandmen deuised to lay their pulse for the most part euer without doores in stackes, reekes, and houels, that the Sunne and wind passing thorow them might bring all the graine to an equall drinnesse and hardnesse.

11111

Againe,

Againe, Pulse being of all graine the coursest and fullest of substance in it selfe, and the straw ever bigge and substantiall, and full of broad thicke leaues ever moist and sappy; it must needs follow that this graine must euer be most apt to sweare in the mow, and so necessarily craueth the greatest store of aire, and the longest time in drying; so that to returne to my first purpose, it must needs follow, that no beanes or pease can be ripe or seasoned in the mow, till it be mid *March* at least; for it is an old saying among the best husbands, *That a March wind is a salt which seasoneth all Pulse*: And if vse or necessity compell men to thrash their pulse before that time, the graine is so imperfect that it must be kilne dried, or els it is fit neither for the vse of bread nor prouender.

Now herein is to be vnderstood that pease or beanes which are kilne dried, may be kept sound, sweete, and good, either on plaster floores, boarded floores, or earthy floores, the space of many yeares without turning or tossing; nor reede you to respect how thicke the heape lye, since beanes after they are once dried on the kilne, or in the Sunne, neuer after will thawe, giue againe, or relent, but remaine in their first soundnesse. But if you preserve your Beanes for other vses, as to boyle in your pot, and feed your seruants withall, as is vsed in *Somerset-shire*, and many other Westly parts of this Kingdome, then it shall be good for you to take oyle barrells, oy'e caske that is sweete, and first Calke them all ouer within and without with ashes, and then put your beanes therein, and close vp the heads, and as it is affirmed by diuerse great Authors of husbandry, it will keepe Beanes sound, sweete and good, twenty yeares: nay, some giue instances of Beanes which haue bene thus kept and preserved the space of
one

one hundred and twenty yeares; and surely I am perswaded, that if Beanes be well and dry got, and thrasht at a seasonable time of the yeare, as in *March* or *Aprill*, that then thus kept, they will last the vttermost of a mans pleasure.

Preseruing
of Pease or
Fetches.

Now for the keeping and preserving of Pease or Fetches, which of all other Graine whatsoeuer, is most subiect to rottenesse and imperfection, because out of its owne nature it is apt to breed wormes, weauils, and mytes, by reason of the much luscious and sweetnesse of the kernell of the Graine; you shall in all things obserue the same courses that you doe with your Beanes, both touching your gathering, drying, stacking, and also thrashing, for as they are most aptest to grow together being neere of nature and condition one to the other, so it is fit that vnto them you doe apply one and the selfe same medicine or remedy.

And herein is to be noted, that as Pease are of more generall vse then Beanes, as for Horse-prouender, feeding of Swine, Pigeons, Pullen, and such like; as also for bread, pottage, to boyle with or without meate, for certainly it is a most wholesome and strong food as may be seene by the people of *Deuon-shire*, *Cornwall*, and *Somerset-shire*, to whose great strength of body not any reason can be giuen more probably then their much feeding on this Graine, and their acquaintance with much and strong labour, so they ought with more care and circumspection to be preserved from all those annoyances that naturally are apt to hurt them, as wormes, rottenesse, mould, mustinesse, and such like.

And first, there is nothing better for the long and well keeping of Pease, then the very well drying of them

them, either in the Sunne or on the kilne, especially those which you vse for bread, prouender, or feeding of Swine: and although some Husbands vse to feede Swine with vndried Pease, nay many times both vndried and vndrest, that is to say, the Pulse or Chaffe not taken away, and are of opinion, that the Graine so giuen, sooner feedeth and puffeth vp Swine then the other, yet they are deceiued; for albeit it twell and puffe vp a beast, yet is the flesh and fat neither so good, sound, and long lasting, as that which is gotten with dry foode, nor doth it make a Swine so thirsty, and the Husbandman is euer assured that when his Swine drinks not well, he feeds not well; therefore what Pease you keepe for bread or feeding of Cattell, by all meanes dry them well, and lay them either in Garners or Floores, and they will last sound and good without breeding worms or weeuils, as long time as you please. But those which you keepe for foode at your owne table, as in portage, or other vses, which must by no meanes be too much dried, because then they aske a double time in boyling, and spend a double quantity of fuell in their preparing. Some vse after they be cleane thrashed and drest, to lay them in a coole close Garner, either of Plaster, Earth, or Boords, of which, Plaster is the best; as for any thing that relenterh or yeeldeth moysture, as Lime, stone walles, or such like, it is most hurtfull, and immediately make h Pease mould and rot: also it is good to lay your Pease in thicke heapes in your Garner, for that will preserve them moyst the longest time, but to spread them thin vpon the floore, by which meanes the Sunne, Ayre, and Winde may passe thorow them, is not so good, for it drieth them too sore, and taketh from them much of their sweetnesse and goodnesse, which

ought

ought most carefully to be preserved. There be others which preserve these tender meate Pease by thrashing them vp, and then letting them lie in their owne pulse or chaffe, and not dressing them but as they haue occasion to vse them, and questionlesse this is a very good and laudable way, for the pulse or chaffe doth maintaine them sweet and moist, and yet keepeth them withall so warme and comfortable, that they last much longer then any other way whatsoeuer, and in this manner of preserving Pease is to be noted, that by all meanes you must let them lye vpon a dry earth-floore, so long as they are in the chaffe, rather then on the board, or on plaster, and yet in this case the boards are better then plaster.

Lastly, and which indeed is the best experiment of all other if you intend to keepe Pease any extraordinary long time, you shall take Barrells or dry Caske, well and strongly bound, and pitch them within exceeding well, with the best pitch or bitumen that you can get, and then sprinkle the pitch all ouer with strong vinegar, then take your Pease being cleane and well drest, and put them into the Barrells, pressing them downe close and hard, then head vp the Barrells, and let them stand dry and coole, and they will preserve your Pease sound, sweet, and good for any vse whatsoever as long as you please, be it for ten, twenty, or thirty yeares, according to the opinions of ancient Husbandmen, and other prouant Masters that haue liued and commanded in Townes besieged, and Townes of Garrison; neither shall any worme, mite, or weauell, euer breed in it, or offend it, nay if any haue in former time beene bred in them, this manner of keeping the Graine, killeth them, and destroyeth them for euer.

Now

Now there is another sort of Pulse which are called Lentils or Lupins, which albeit they are not so generally vsed for the food or sustenance of man, yet they are for horse, swine, and other cattell as much in request as any Graine whatsoever, and indeed doe feed fatter and sooner then other ordinary Pulse, and the flesh so fed is sweeter and pleasanter both to the eye and to the taste, then that which is fed with Beanes or Pease; also they are a Pulse very Physicall and good for many medicines, as may appeare by the workes of many learned Physicians; and these the longer they are kept, the better they are, and fuller of profit. To preserve them then in good and sound estate, it is meete to reape them in very faire weather, and to Stacke them vp exceeding dry, and if they be laid in the Barne, or any close house, it is not amisse, for they will endure housing better then any other Pulse, yet the sooner you beate them out of the straw, or thrash them vp, the better it is, for husbandmen suppose there is no greater hurt to this kind of Graine, then the long keeping it in the straw; for it is of such rankenesse, that the very straw and cods breed in it much putrification; and I my selfe obserued both in *Spain*, and in the neighbour Islands, where is great abundance of this kind of Graine, that they doe no sooner gather it and bring it home, but immediately they thrash it; nay, some thrash it in the fields vpon the lands where it growes, and so bring it home, then spread it on faire boarded floores in very great heapes, or else lay it vp in close hurches, or bins, such as Wheat and other white graine is to be kept in. If you dry this kind of Pulse in the Sun, or vpon a kiln, with a very moderate & soft fire, & then lay it

Preseruing
of Lentils
or Lupins.

vp either in close garner, or close hutch, it will last many yeares sound, good, and without corruption; there be other Husband-men which mixe with this graine when it is thrasht, a halfe part of hot, dry, white sand, or at least couer the whole heape of Pulse with the sand, and doe finde that it keeps the graine very sound and good many yeares together. But to conclude, if you take strong vinegar, and a good quantity of *Lacerpitum*, and dissolue and mixe them very well together, and then hauing laid your lentils or lupins together on a faire boarded floore, in large, broad and flat heapes, about two foote, or two foote and a halfe thicke with the vinegar and *Lacerpitum* sprinkle ouer all the heape, and not any change of weather, frosts, wormes or other vermine shall doe them hurt, but they shall remaine sound and good as many yeares as you please to keepe them. There are other husband-men that in stead of this before rehearsed, take onely sweete oyle, and sprinkle it all ouer the graine, and finde the same vertue and effect, for neither wormes nor other vermine will touch it, nor will the radicall humour thereof at any time waste or decay, but remaine strong, full and sound without any kinde of diminishing, nor shall you finde any abatement of it, or shrinking in the measure, but that which was a bushell this yeare, will be also a bushell the next yeare, and as many yeares after as you please; which is no small profit to the owner: whereas on the contrary part if the graine be either dried in the Sunne, on the kilne, or by the winde, you shall hardly haue of euery such bushell so dried, three pecks and a halfe againe, which is by conasuration at euery quarter which is eight bushells, full one bushell lost, and yet this Pulse thus preserued

served as before said, shall bee as good for any vse whatsoeuer fit for such Corne to be employed in, as any other dried graine whatsoeuer, and yeeld as much euery way, and altogether as good meale, and as good meate.

Now touching the preserving and keeping of Oates, it is to be vnderstood that of all Graine it is least casuall, because of it selfe naturally it breedeth no euill vermine, and is againe preserved and defended with a double huske, whereby neither cold, moisture, heate, nor drinesse is able so soone to pierce and hurt it as other graines which are more thinne clad and tender, yet because it is of great and necessary vse both for cattell and pullen, and that neither the Husband nor Housewife can well keepe house without it, you shall know that the best way to preserve it longest, is, after it is thrasht to dry it well either in the Sun or on the kilne, and then either put it into close Garner or close caske, and it will keepe many yeares sound and sweet.

Preseruing
of oates.

Touching the preserving of Oate-meale, which is the inner kinnell of the Oates, and a graine of most speciall vse in the husband-mans house, as in his portage, in his puddings, and in many other meates necessarily vsed for the labouring man; It is an experiment not altogether so curious as any of the rest formerly written of, for no Oate-meale can be made, but the Oats must be exceedingly well kilned dried, or else the kinnell will not part from the hull, and being dried, as is fit, that drying is sufficient to keepe and preserve the Oate meale diuers yeares: provided euery that presently after the making of your Oate-meale, you put it into dry close caske or drie close garner (but caske is the better) and so as it may

Preseruing
of oate-
meale.

remain exceeding dry (for any thaw or moysture corrupts it) and as neere as you can let it haue, if it be possible, some ayre of the fire, for the warmer it stands, the better and longer it will last as experience sheweth.

Preseruing
of any meale.

For the preseruing or long keeping of any sort of meale, there is no better way then first to bould and searse him from his branne, for the branne is very apt to corrode and putrifie the meale, and to bring it to a faughtinesse or mustinesse, then into very sweet and cleane dry caske close and well bound, treade in your meale so hard as you can possible treade it, and then head it vp close, and so you may keepe it either by land or water as long as you please, and when you haue any occasion to spend of it, be sure to loosen no more of the meale then you presently vse, for the faster and closer the meale lyeth together, the longer and sweeter it will last, for it is the gathering in of the ayre that onely corrupts it.

And here is also to be noted, that you should not presently assoone as your meale is ground, bould from the branne, but rather let it lie a weeke or fortnight, in the bran in some close bing or trough, and then after that time bould or searse it, and you shall finde it to afford you in euery bushell, more meale by at least halfe a pecke then if you should presently assoone as it comes from the mill, whence it proceedes, that the cunning and skilfull Baker will euer haue a weeke or fortnights prouision of meale before hand, which lying so long in the branne, paies double interest for the continuance.

Now if it fall out so, that either by trade of Merchandise, or other occasion, you buy any meale by way
of

of transportation which is caskt vp (as much meale is sold by the barrell) you shall then presently as soone as you haue bought it (if it be for your owne vse or expence) breake open the heads and empty the meale vpon faire sheets on a cleane floore, and then spreading it abroad, let the Sunne and Aire passe thorow it which will dry vp the sweat, and if there be any taint of faughtinesse, take it away, and bring the meale to his first sweetnesse, and then immediately boulte out the course branne, and after as was before declared, tread it hard into fresh and sweet caske: and thus you may keepe your prouision of meale all the yeare long; nay, if need require two or three yeares, for after the first sweat is taken away and kindly dried, there is no doubt to be made of any that shall follow after.

Lastly, touching the preseruing and keeping of all manner of small seeds of what nature or quality so euer they be, whether hewepe, line, rape, mustard-seed, or any other garden-seed whatsoeuer, though truly and properly they last neuer aboue one yeare, nor are fit for seed or increase after that date expired, yet in as much as they are medicinable after, and a much longer time, therefore you shall vnderstand that the best way to keepe them safe and sound, and the fittest for vse and profit, is first to gather them as soone as you perceiue them to be ripe, and the weather being bright, cleare and dry, then shall you dry or wither them in the shade and not in the Sunne, especially vpon a plasterd floore, where the light looketh to the South, and be sure that as little Sunne and moisture come to them as you can, for both are maine enemies; which done, bind them vp in bundles without thrashing, and so hang them vp and keepe them in their owne cods, and they

*Preseruing
of all small
seeds.*

they will last for all vses, a full yeare, and for some particular vses two or three yeares; and in this manner you may also preferue all manner of hearbes, weedes, flowers, rootes, and the barks or rinds of all manner of trees.

CHAP. 19.

How to keepe graine, either for transportation by Sea, or for vse in a towne of Warre or Garrison, from one yeare to one hundred and twenty.



O speake of the Graines and Pulses which are meetest for the sea, and their severall vses.

The vse of
graine, pulse
at sea,

Of Rice, and
the vse.

It is to be vnderstood that the best and principallest Graine which is indeed both most sweete, most fresh, most pleasant in taste, and most long lasting, is Rice, which although it grow not much in our Kingdome, but that we are beholden to our good neighbours for the trade thereof, yet it is in such plenty; where we fetch it, that we need neither complaine of the scarcity nor the cost, and so much the rather in that a pecke thereof will go further then a bushell of any other graine; of this Rice is made many good and wholesome dishes, some thicke, some thinne, some baked, some boyld, as thus: If you take a quarter of a pound of Rice, and boyle it in a pottle of water, till it come vnto an indifferent thicknes, and then put into it a good lump of potted or barrellled butter, and as much sugar as shall salt-wise season it to an indifferent sweetnesse, it is a dish of meate, meete for an Emperour at sea, wholesome, good, and light of digesture, and will be as much as foure reasonable men can well eat at a meale;

meale; for the nature of the Rice is such that it will swell in boyling and grow to that bignesse, that in an instant it will thicken a pottle; some vse the night before they boyle it, to sleepe it in so much water as will onely couer the Rice all ouer, and then the next day boyle it in a pottle of water more, and the Rice so steeped will so swell, that all the first water will be drunke vp, and a great deale of lesse boyling will serue to make it reddy, and sure then this a man cannot finde a cheaper way to feede men, since one pint of water and the fourth part of a quarter of a pound of Rice (which comes not to above a halfe penny at the deereft reckoning) is a meale sufficient for a mans eating, hauing bisket and drinke proportionably. And this dish of meate being but thus thinne boyled, is called at sea Lob. lolly, and after sailing is wondrous wholesome and comfortable to any man, whether he be sicke, sound or diseased, and both abateth infirmities, and hastneth the healing of all wounds. There be others that after they haue steeped this Rice (as aforesayd) do then boyle it in like manner, till it be so thicke that a spoone may stand vpright in it, and no liquidnesse of the water perceiued, then put a good lumpe of butter into it, and boyle it with it, and stirre it about, and it will make it come most cleane out of the pot in which it is boyled; then season it with sugar and a little cynamon, and it will be a dish of meate right good and delicate, and meete for any man of what quality soeuer, that is worth goodnesse or preferuing, nor neede the quantity exceede the proportion already prescribed.

Againe, if you haue meale in the ship, if you take of this Rice steeped in water, and a little lightly boyled and seasoned with sugar cynamon and ginger, and a
good

good quantity of butter, and then bake it in little Pasties, you shall finde it a most delicate, pleasant, and wholesome meate, and that a penny in it shall go further and giue better contentment then foure peniworth of Beefe, Bacon, Fish, or any other hard salt meate; yet I doe not wish any man of ship board to make this a continuall feeding dish, for it is both too pleasant and too strong, and where euacuation of some humors are wanting, may breede inconuenience in strong bodies; but rather to vse it once a weeke as a physicall nourisher, or for the comfort of sicke and diseased men, whose stomackes are tane away, or else weakened; there may be also made of this Ryce in time of necessity (being ground to a fine meale) an excellent good bread or ruske, which is pleasanter, sweeter, and much longer lasting then any made Wheate, or any other graine whatloeuer, besides many other seedes which would in this place shew but too much curiosity to repeat.

Wheate, and
the vie.

The next Graine vnto Rice which is of estimation and great seruice at the Sea, is Wheate, of which although there be diuers kinds, yet they are all alike for the seruing of this purpose; onely the large and thicke huld Wheate (being well dried) will last the longest, but the smaller and fine skind Wheate, yeelds the purer flower, and makes the better meate. Now of this Wheate is to be made diuers dishes of meate, for some doe take it and bruse or beate it in a bagge, till the vpper skin be beaten off, and then hauing drest and winnowed it, boyle it in cleane water till it burst, and grow as thicke as pap, then take it from the fire, and being hot, put into seuerall dishes of wood, or traies, so much in euery dish or tray as may serue foure men, and so let it coole;

coole, then giue it to the sicke or sound, as you shall be directed, and it is an excellent wholesome good meate either cold or else hot, and a little butter melted with it, or being againe boild in fresh water; and seasoned with salt and a little sugar, it makes an excellent grewell, or lob-lolly, which is very soueraigne at sea; also your parched wheate is a very good foode at sea, and of much request and estimation, being sprinkled with a little salt, and of this food a little will serue a man at a time by reason that the much sweetnesse thereof soone filleth and cloyeth the stomacke, yet it is wondrous light of digestion, and breedes great strength, and much good blood, as we dayly find by experience.

The next Graine vnto this which is to be recommended to the sea (and which is indeed not any thing inferior to either of the other going before, both for strength and lasting) is Oatemeale, which by reason of the great drinesse, and drying thereof, fecles little or no imperfection at the sea, as being vnapt to sucke or draw in any of the ill or moyst vapors thereof. Of this Oatemeale is made many good, fresh, and comfortable meates at Sea, as grewell, or Lob-lolly, by boyling it in fresh water, and seasoning it with salt, and (if you haue it continually) sometimes with sugar and a few Currants, and a little mace, which is meate of great strength and goodnesse, especially for such as are sicke and weake, for it is a great restorer of nature, and a purger of the blood; also to sterpe the whole grois of Oate-meale a night in water, and then draining them, and putting it into a bag, boile it till the grots breake, then putting it out of the bag, butter it with butter, and it is an excellent foode; also boyling Oatemeale in fresh water with barme, or dregges and hinder endes of
your

Of Oate-
meale and the
vse.

your Beere-barrels, makes an excellent good pottage, and is of great vse in all the parts of the West county, especially, where Marriners or Seamen live; and are called by the name of Drousson pottage. Also of oate-meale is made that meate which is called in the West, Washbrew, & may be made at the sea at your pleasure, being a meate of that great account amongst *Devonshire* and *Cornish-men*, that they will allow it no paralcl; and for mine owne part I have heard a most famous and well learned Physitian in those parts allowe it to be a meate of singular great strength and goodnesse, and withall so light of digestion, that a man can very hardly feir vpon it at any time, and I am the rather induced to belecue the same, because I have obserued and seene many of the labouring men of that Countrey to eate such an vameasurable quantity thereof, that in mine eye one mans supper would haue serued a whole familie.

But you will say, hunger and labour are such excellent sawces, that they will digest any thing. To that I answer, that I haue seene Gentlemen and Gentlewomen of that Countrey, of whom as much curiosity hath attendend, as is lyable to the City, pay such as haue had sicknesse their best familiar, yet care of this with great and sharpe appetite, and when health was most to be feared, then to boast of most soundnesse. This Washbrew is to looke vpon like Painters Cize, or new made Jelly, being nothing but the very heart of the Oate-meale boyled and drained to that height and thicknesse, hauing neither hull nor bran in it, but the pure meale and water, and it is to be eaten eith with wine, strong beere, or ale, or with clarified honey, according to mens stomackes or abilities.

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Now

Now this the writers thereof affirme, that by no meanes it must be chewed, but rather swallowed by the spoonfull whole. Because chawing like a pill makes it taste vnpleasantly. There is againe another meate to be made of Oate-meale, which is called Girtbrew, and is somewhat more coorse, and lesse pleasant then Washbrew, hauing both the branne and huls in it, yet is accounted a foode of a very good strength, and exceeding wholesome for mans body, and of my knowledge much vsed and much desired of all labouring persons that are acquainted with it: Many other foodes there are to be made of Oatemeale, but these shall be at this time fully sufficient.

The next graine to this I account Barley, which may be euery way vsed like vnto wheat, either to make grewell, to be creyed, parcht, or boyled: and of Barley for this purpose of food, the best is *French Barley*, the next is Barley big, or beare Barley, and the worst are the spicke or battledore Barley, and our common *English Barley*. Of Barley
and the vic.

And as Barley or Wheate, so you may vse your Bucke and your *Indian Silligo*, for they are of like nature, onely aske a longer time in their beating, steeping, and boyling, because they are naturally more hard, and more dry, by reason of the heate of the climate in which the best grow; and is euer to be obserued for a rule, that the dryer you keepe your Corne at Sea, the better it is, the sweeter and longer lasting. Bucke, and
the vic.

Now hauing shewed the vse of these lighter graines, I will come to Pulse, and shew their vse and benefit at the Sea, or in besieged Townes: and of Pulse, I will first speake of Beanes as a principall foode, wholesome Of Pulse, and
the vic.
the vic.

The French
Beane.

and strong, and though not so fine and light of digestion as any of the former, yet exceeding hearty and sound, and a great breeder of good blood; they are for the most part to be boyled whole, till such time as they appeare soft and tender, or begin to breake, and then drained from the water, are serued in traies, and well salted, and so eaten; a pottle whereof is thought a full proportion for foure men: and of these Beanes there are diuerse kinds, as the common garden beane, or the French beane, which is great, broad, and flat, and these are the best to boyle, either with meate, or by themselves, and aske the least labour, because their outer skinne is most tender, and the inward substance most apt to be mollified and softened: they may also bee boyled both when they are young and greene, and when they are olde and dry, and the meate at both times is good and sauiory.

The Kidney
Beane.

The next beane to these are the Kidney beane which is flatter, and lesser, and neerer the proportion of a kidney then the French beane is, and this is also a garden beane, and whilst it is young and greene is to be eaten Salet wise after they are boyled, both the cod and beane together, and it is certaine a better sallet cannot be tasted; for the cod or huske is euery way as excellent in taste as the beane is; but after they grow old and dry, and that the moysture is gone out of the cod, then it is meete to thrash them, and then boyle them like the French beane, and they are euery way as good meate, and as soone boyled and as tender.

The next beane to these are your common and ordinary field beanes, which hauing tough and hard skinnies, aske more boyling then the other beanes, and are somewhat harder in taste, yet a good sound soode also: there

there bee many that parch them in the fire, and thinke them then the best meate, because the fire sooner breakes the skinne and softneth the kinnell; but they cannot be done so abundantly, and therefore are not so much in vse.

After this great sort of Pulse, I will now speake of the smaller sort, as Pease and their like: and of the vse, Of pease and the vse.
Pease there be two kinds, the garden Pease, and the field Pease, and for this vse (albeit both are very good) yet the garden pease are best, for they are soonest boyled, and are most tender, and serue for most vse, as for pottage, boyling, parching or spelting; and of these garden pease, there are diuerse kinds; as white pease, French pease, hastings, rounsiualls, and such like; the first being the longest lasters, the second the pleasantest in taste, the third the earliest and tenderest, and the last largest and fullest.

The Field Pease are onely of two kinds, as the white Seuerall sorts of garden pease.
pease and the gray pease, and they seldome make pottage, because they are vnapt to breake, but are onely for boiling and making of leape Pease, or for parching, yet a good and a strong food also: and as we vse Pease, so in other Countries they vse lupins, lentil, tares, fetiches, and such like smaller pulse, but they are neither so good, wholesome, nor sauourie in tast, being a kinde of graine more ranke, fullsome, and breeding of ill blood and infection within, these in cases of Sea-fare and Warre-fare ought principally to bee eschewed and shunned.

Now it resteth after this long digression of these seuerall Graines, and their vses, with the meates and profits which are made for them, that we come to the safe manner of keeping and preserving them either by land or water, for victuall or transportation, so as they

they may last and endure without ill smell or rotten-
ness.

To transport
Graine.

And first for transportation of Graine by Sea, it is
two wayes to be done, as either in great quantities for
trade and the victualling of other nations, or in smaller
quantity for victualling the men in the ship, prepared
for a long and tedious voyage.

Transporting
Graine for
trade.

For the transporting of Graine for trade in great
quantities, it is to be intended the voyage is seldom
long, but from neighbour to neighbour, and therefore
commonly they make close decks in the ships to receive
the Graine, faire and even boarded, yet if such decks
bee matted and lined both vnder and on each side, it
is much the better, and this matting would be strong
and thinne; there be some which make the decks on-
ly of mats, and sure it is sweet, but not so strong as
the boord, therefore the best way of transportation
is to haue strong boarded decks well matted, and then
spreading the corne of a reasonable thicknesse, to co-
uer it with matting againe, and then to lay corne on
it againe, and then mats againe, that betweene eu-
ery reasonable thicknesse of Graine a mat may lye, the
profit whereof is, that when the Corne with his owne
heate and the working of the Sea shall beginne to sweat,
which sweat for want of ayre to dry it vp, would turne
to putrefaction, then these mats thus lying betweene,
will not onely exhale and sucke vp the sweat, but also
keepe the Corne so coole and dry, that no imperfecti-
on shall come vnto it: and here is to be noted, that
these mats should rather be made of dry white bents,
then of flags and bulrush, for the bent is a firme, dry,
crispe thing, and will not relent or sweat of it selfe, but
the flag or bulrush is a spongy and soft substance which

is neuer empty of his owne and other moistures.

Now for transporting of Graine for victuall for the ship, which is in much smaller quantity, because it is but for the priuate vse of a few within the ship; the one-ly best and safest way is to take Salt-fish barrels, or any caske in which any Salt-fish hath beene piled, as Cod, Herrings, Salmon, Sprats, or any other powdered Fish; and whilst the vessels are sweet, you shall calke them both within and without plaster, daubing them all ouer; then into them put your graine of what kind soeuer it be, and head them vp close, and then stow them in such convenient dry place of the ship as you shall thinke fit, and questionlesse, if beleefe may be giuen to the worthiest Authors which haue writ in this kind, you may thus keepe your graine sweete, sound, and in full perfection from one yeare to an hundred and twenty yeares; but certainly, dayly experience shewes vs, that all kind of graine thus put vp and kept, will remaine sound and sweet, three, foure, and as some say, seuen yeares, for so farre hath lately been tryed: and what here I speake of ship boord, the like may be done in any towne of Warre or Garrison, whether besieged or not besieged, or in any other place where any necessity shall compell; the prooffe of this manner of piling or putting vp of graine, serueth as well for Land as Sea.

Transporting
for victuall.

CHAP. 20.

*The enriching of all manner of barren Grounds, and
to make it fruitfull to beare Hops.*

THe Hop of all Plants is the most tender, and can endure neither too rich a ground, nor yet too poore, for being planted in the first, it

bringerh forth onely leaues and no bels, and in the latter yeeldeth neither leaues nor bels.

Abating fertility.

Now in the first sort of ground which is fertile and rich, I haue nothing to doe, but onely to aduise how you may allay and lessen that too much fatnesse, by mixing your hils well with chalke or small sharpe grauell, if it be a hassell or mixt mould, and with good store of red sand if it be a stiffe clay, for either of these mixtures will in short space abate any fertility.

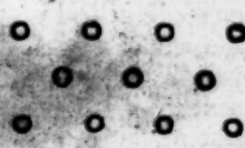
Increasing of fertility.

But if the soile be contrary to this, that is, extreame barren, then you shall seeke by these meanes following to encrease the fertility: First, when you haue taken view of that barren earth, which you intend to conuert to a Hop-garden, you shall first looke to the situation thereof, whether it lye high or low, whether it be subiect to inundations or drownings, or that it lye safe and free from any such annoyance: if it be subiect to great and deepe ouer flowes, then it is no ground for this purpose: but if it be onely liable but to some small washings, then you may by a few small drains and sewers cast through your allies, conuey away the water vnto some lower ground, so as it may not continue long in the Gardens to do hurt. Besides, for a further safety to the Hop, you shall make your hils a great deale bigger and higher, that when any ouer-flow shall happen, the water may not reach aboue the mid part of the hill at the most, for the roote may indure moystning, but not drowning: and this water thus running through the allies, and not drowning the rootes, will bring to the ground very much fertility. But howsoeuer after you haue caid your ground of these particular faults, yet the generall fault which is barrenesse will remaine still: therefore hauing plotted out your garden, and fenced it suffi-

Choyce of Earth.

Draining water.

sufficiently about, you shall then cast vp your hils about *Michaelmas*, placing them in a very orderly manner, Casting of the hills and allies. and making allies betweene them of foure or five foote bredth betweene hill and hill, so as a man may walke at pleasure through and about them, neither shall these hils stand all directly behind another, for so one will ouer-shadow another, which is an annoyance, but according to this Figure, where there is a largeness of space, and a by-passage, through which the Sunne may come to giue comfort to euery plant.



These hils if the ground be free from water may be raised about two foote, or a foote and a halfe high, and of a compasse answerable to the height, neither so little that the hill may be sharpe like a Sugar loafe, nor yet so bigge, that the hill may lye flat, and so retaine and hold any raine, or wet, which shall fall vpon it; but you shall keepe a due middle proportion, making the hill conuenient for your plants and poales, and so as it may shoote or put off any wet or other annoyance which shall fall vpon it.

Now these hils you shall not make entirely, all of the one mould, but you shall take as it were a third part or better thereof; then another part of the earth which lyeth vnder dunghils, and the the last part of sope ashes, & these three bodies you shall mixe equally together, & of them compound your hop-hils. But if this seeme somewhat too difficult, and that you cannot find enough for your purpose of either of these measures; then you may take three parts of the naturall earth, & but only a fourth part of the other two, and thereof mixe your hop-hils,

The composition of the enriching of Hills.

and it will be sufficient to afford you profit enough; provided you be able once in three or foure yeares to renew it, for so long this will last in full strength and power.

Preparing of
the alleys.

When you haue thus made vp your hills, you shall then pare vp with a paring shouell, all the greene swarth quite through all your alleys, at least foure fingers thick, and with the swarth so pared vp, you shall couer all your hills almost to the top, turning the greene swarth next vnto the earth, so that it may rot, for that is an excellent measure also. When your alleys are all thus cleansed of their swarth, you shall take good store of Braken or Ferne, and straw it all ouer quite through all the alleys, that it may lye a good thickeffe, almost to the midst of the hills, which hauing all the Winter to rot in, will not onely be an exceeding comfort to the hills, and preferue both them and their Plants from many euils, but also being shouelled vp together with the earth in the Spring time, will be a maruiculous strong measure wherewith to replenish the Hills, and to make them to prosper exceedingly, and to saue much other cost and charges, as well in measure as in cariage.

The planting
of Herbs.

When your hills are thus enriched, and your alleys thus prepared, you shall then open your hills in the tops, and set your plants, that is to say, in euery hill foure plants at the least, being well prepared, and this should be done in the moreth of *October*, and these plants must bee set good and deepe in the earth and couered all ouer at the least foure fingers thicke; and if with the earth which couereth these plants, you mixe Oxe blood and Lyme, it will not onely giue great comfort and nourishment to the plants, but also defend and saue the roots from wormes and other vermins,

vermines, which otherwise would seeke to destroy them.

After your garden is thus planted all ouer, you shall then let it rest till the following Spring, and about *April*, finding the small twines of your Hoppes issued out of the hils, and running alongst the ground, you shall then set vp your poales, which poales so they be long and straight may be of any wood you please, as either Ash, Elme, Withy, Willow, or Sallow, and in the setting vp of these poales you shall haue two very carefull respects: first, that in putting in of the poales, and fastning them within the ~~earth~~ ^{soaling of Hoppes.} you do not hurt the Hoppe-rootes, which a small carelesnesse may doe, but be sure to set them cleare at the rootes: and that you may doe it the better, and make your poales to stand the faster, it is good that you haue an iron algar wherewith first to pearce the ground, and then to put the poale in after, and so ram it in hard that it may not stirre: the second care is that you place not one poale to ouer-shadow another, but that they may stand so cleere one from another, that which way soeuer the Sunne shall cast his beames, yet every plant (as it winds about the poale) may be an equall partaker of the same; this with a small obseruation in the setting vp of the poales, may easily be performed. The number of poales that you shall set vpon every hill, must be answerable to the Syens which shall issue from the rootes, allowing to euery poale two Syens at the least, and not aboue three at the most. These Syens (when your hils are poaled) you shall with your hands twine about their seuerall poales, and those which are but new peeping from the ground you shal so fold among the other branches, as they may of themselues run about the poale; & as these so also all

the other twigs, which are any way deriued from the maine Stien, leauing not any at al to run vpon the ground, for that is altogether profitelesse, and to no vse.

Of weeding
Hoppes.

For the weeding of this barren earth thus made into an Hop garden, there is little care to be had: for first the sope ashes wherewith the hils are measured, the oxe bloud and the lime, are such enemies to all manner of weeds, that they will not suffer any to grow where they abide: Next the Braken and Ferne which couereth the alleys is such a poisoner and smotherer of any thing that shall grow vnderneath it, that it will not suffer any weed to peepe or spring vp through it; yet if in any especiall place where neither of these defences come, it happen that any weedes do grow, then you shall with your best care cut them away, or pull them vp, and so your garden shall remaine comely, pleasant and fruitefull to euery prospect.

CHAP. 21.

A generall computation of men, and cattels labours: what each may do without hurt daily.

Plowing and
Sowing.



TO speake generally of all husbandly works where the countrey is tollerable without any extraordinary difficulty, you shall vnderstand that a man may well in stiffe ground, plow an acre, or an acre and an halfe, and in light sand grounds two or three acres with one teame in a day, and he may plow and sow in stiffe ground two acres and a halfe each day, and in light ground foure at least with one teame, and alwayes what he soweth, that hee may harrow the same daye also.

A man

A man may well mow of good and deepe loggy meadow, or of rough vneuen meadow, euery day one acre, mowing cleane and making a smooth board: of well standing and good smooth meadow an acre and a halfe each day: and of very thin and short grasse, or vpland meadow two acres at the least euery day.

Mowing.

Also, he may mow of corne, as Barley and oates, if it be thicke, loggy and beaten downe to the earth, making faire worke, and not curting off the heads of the eares, and leauing the straw still growing, one acre & an halfe in a day: but if it be good, thicke and faire standing corne, then he may two acres, or two acres and a halfe in a day: but if the corne be short and thin, then he may mowe three, and sometimes foure acres in a day, and not be ouer-laboured: Also of Beanes he may mowe as much, and of Pease mixt with Beanes, hauing a hooke to follow him, no lesse; for they are workes in this nature most easie and least troublesome.

One man with a binder may well reape an acre of Wheate, or Rye in a day, if it be principall good and well standing, but if laid or beaten downe with weather, then three roode is fully sufficient for a dayes labour; but if it be thinne and vpriight standing, then he may reape and bind fiue roods in a day: of small Pease, Fetches, and such like, a man may well reape two acres euery day.

Reaping.

Now forasmuch as it is a custome in diuers Countries (and truly is exceeding profitable and worthy in imitation) to sheafe and bind vp both Barley and Oates, as well as Wheat or Rye, and that it both sauerth much Corne, and also makes it take a great deale lesse roome, and that this labour is to be done after the mowers, as the other was after the reapers by gathering the Bar-

Binding of Barley and Oates.

ley or Oates vp with a sickle or hooke, as it lies in the swath, and so binding it in sheafes, you shall vnderstand that one man in a day will bind as much as one mower can mowe; and if the men be any thing skilfull in the labour, two binders will binde as much as three mowers can mowe.

Gathering in
of greine.

For the gathering or inning of graine, no man can proportion the number of loads, or quantity of ground shall daily be brought home, sith the iourneyes be vncertaine, some going a quarter of a mile, some halfe a mile, and some a mile: therefore it is the Husbandmans best way, the first day to goe with his Teame himselfe, and both to obserue the labour and distance of place, and by that to compute what may be done after without hurt to his cattle, and where he fayles of any hope, there to take a strict account of the error, for it is either ignorance or carelesnesse, which brings forth mischances, speaking of husbandry, as ouerthrowing the Teame, ouer-loading the Teame, breaking necessary instruments, or not respecting the wayes and passage, any of which may in a day hinder more then halfe the dayes labour.

Ditching.

Again, a man may in a day ditch & quickset of a reasonable ditch foure foot broad, and three foot deepe, a rod or a poll a day, allowing sixteene foote to the rod, and so of larger measure lesse ground, and of lesse ground larger measure, according to the sufficiency of the fence which you purpose to make.

Hedging.

A man also may hedge in a day, if the hedge be good and substantiall, that is to say, five foote high, well bound, thicke stackt, and close layed, two rod in a day, and if the worke bee lower or thinner then double so much, according to the former proportion.

For

For this plashing of hedges, or making a quicke fence if he do it workemanly, and that the growth be high and well growne; and then he lay it thicke, close, and strongly bound on the top, turning the quicke downeward and inward, to plash a rood a day is as much as any man can well doe, but if yee plash it after the west countrey fashion, that is, onely cutting it downe, and laying it along close to the ground, seeking only thicknesse, and not much guard or comelinesse, then he may well plash a rood and a halfe in a day without trouble, and sure in this worke is great care and art to be vsed as well for the preservation of the quicke, as the goodnesse of the fence, being a thing of worth and validity to euery Husband-man. Plashing.

Againe, a man may delue or digge, as for garden mould, Hempe-yard, Flaxe-yard, or for the setting of corne, or leuelling of vneuen places, one rood in a day, and the ground so digged and delued, he may rake, dresse, and leuell, in the same day also, but if he digge it deepe, and trench it, and measure it, as is meete; either for garden, orchard, or corne setting, then to delue halfe a rood in a day, is a very great proportion, because ordinarily to delue, as to receiue ordinary seeds, requires but one spade graft in depth, but extraordinarily to delue, as for enriching and bettering of the ground, and to cleanse it from stones, weedes and other annoyances, will require two spade graft at the least. Deluing.

Lastly, a man may thrash if the corne be good and cleane, without some extraordinary abuse or poverty in the graine, in one day foure bushels of Wheate or Rye, six bushels of Barly or Oates, and five bushels of Beanes or Pease, but the Pulse must then bee imagined to be exceeding good, otherwise a man shall thrash lesse of Thrashing.

of it, then of any other kinde of graine, for as when it is well loaden, it yeeldeth plentifully, so when it is poore and lightly loaden, it yeeldeth little or nothing, and yet hath not one stroke lesse of the flail, nor any labour saved more then belongs to the best Pulse whatsoeuer being euer at least three times turned, and foure times beaten ouer.

The particular
expende of
a day,

Having thus generally runne ouer (in a short computation) the labours of the husbandman, I will now briefly as I can, goe ouer the particular daies labours of a Farmer or Plowman, shewing the particular expence of euery houre in the day, from his first rising, till his going to bed, as thus for example we will suppose it to be after *Christmas*, and about plow-day (which is the first letting out of the plow) and at what time men either begin to fallow, or to breake vp Pease-earth which is to lye to bait, according to the custome of the Countrey, at this time the Plowman shall rise before foure of the clocke in the morning, and after thanks giuen to God for his rest, and the successe of his labours, he shall goe into his stable, or beast-house, and first he shall fodder his cattle, then cleanse the house, and make the boorhs cleane; rubbe downe the cattle, and cleanse their skins from all filth, then he shall curry his horses, rubbe them with cloathes and wispes, and make both them and the stable as cleane as may be, then he shall water both his oxen and horses, and housing them againe, giue them more fodder, and to his horse by all meanes prouender, as chaffe and dry Peale or Beares, or Oate-hulls, Pease or Beanes, or cleane Oates, or cleane garbidge (which is the hinder ends of any kinde of graine but Rye) with the straw chopt small amongst it according as the ability of the Husbandman is.

And

And whilst they are eating their meate, he shall make ready his collars, hames, treates, halters, mullens, and plowgeares, seeing every thing fit, and in his due place, and to these labours I will also allow full two houres, that is, from foure of the clocke till sixe, then shall he come in to breakefast, and to that I allow him halfe an houre, and then another halfe houre to the gearing and yoking of his cattle, so that at seuen of the clocke he may set forward to his labour, and then he shall plow from seuen of the clocke in the morning, till betwixt two and three in the afternoone, then he shall vnyoake and bring home his cattle, and hauing rub'd them, drest them, and cleansed away all dirt and filth, he shall fodder them and giue them meate, then shall the seruants goe into their dinner, which allowed halfe an houre, it will then be towards foure of the clocke, at what time he shall goe to his cartell againe, and rubbing them downe, and cleansing their stalles, giue them more fodder; which done, he shall goe into the barnes, and prouide and make ready fodder of all kinds for the next day, whether it be hay, straw, or blend fodder, according to the ability of the Husbandman: this being done and caried into the stable, ox-house, or other conuenient place, he shall then goe water his cartell, and giue them more meate, and to his horse prouender, as before shewed: and by this time it will draw past sixe of the clocke, at what time he shall come in to supper, and after supper he shall either by the fire side, mend shooes both for himselfe and their family, or beate and knock gempe or flaxe, or picke and stampe apples, or crabs for cider or verdiuice, or else grind malt on the quernes, picke candle rushes, or doe some husbandly office within doores till it be full eight a clocke: Then shall he
take

take his Lanthorne and candle, and goe to his cattell, and hauing cleansed the stalles and planks, litter them downe, looke that they be safely tyed, and then fodder and giue them meate for all night, then giuing God thanks for benefits receiued that day, let him and the whole household goe to their rest till the next morning.

Now it is to be intended, that there may be in the household more seruants then one; and so you will demand of me what the rest of the Seruants shall be imployed in before and after the time of plowing: To this I answer, that they may either goe into the barne and thrash, fill or empty the malt-fat, load and vload the kilne, or any other good and necessary worke that is about the yard, and after they come from plowing, some may goe into the barne and thrash, some hedge, ditch, stop gaps in broken fences, dig in the Orchard or Garden, or any other out-worke which is needfull to be done, and which about the Husbandman is neuer wanting, especially one must haue a care euery night to looke to the mending or sharpening of the Plow-irons, and the repairing of the Plow and Plow geares, if any be out of order, for to deferre them till the morrow, were the losse of a dayes worke, and an ill point of husbandry.

Particular
labours of
Cattell.

Now for the particular labours of Cattell, though it be already inelusiueely spoken of in that which is gone before, where I shew you how much a man may conueniently plow in a day with one Teame or draught of cattell, yet for further satisfaction, you shall vnderstand, that in your cattell there are many things to be obserued, as the kind, the number, and the soile they labor in, for the kind which are Oxen, Bulls, or Horses, the best for the draught, are Oxen, and the reasons I haue shew-
ed

ed in my former workes, the next are Horses, and the worst Bulls, because they are most troublesome; the number fit for the plow is eight, sixe, or foure; for the Cart, five or foure; and for the Waine neuer vnder sixe, except in leading home of haruest, where loading easily, foure very good Oxen are sufficient, for the soile if it be of the toughest and deepest earth, eight beasts can doe no more but fallow or breake vp Pease-earth, no nor fewer stirre, if the season grow hard and dry; for soyling, winter sigging, and seed furrow, sixe beasts may dispatch that labour: if the soile be mixt and hassel, then sixe may fallow and sow Pease, and foure doe euery other ordure: but if it be light and easie sand, then foure is enow in euery season. For the quantity of their worke, and ox-plow may not doe so much as a horse-plow, because they are not so swift, nor may be driuen out of their pace, being more apt to surfet then horses be, so that for an ox-plow to doe an Acre, and a horse-plow an Acre and a rood, or an Acre and an haife in good Ground, is worke fully sufficient.

CAP. 22.

The applying of Husbandry to the seuerall Countries of this Kingdome, wherein is shewed the office and duty of the Carter or Plowman.



T is to be vnderstood that Husbandry doth varie according to the nature and climats of Countries; not one rule obserued in all places, but according as the earth, the ayre, the much or little heat, moisture or cold doth increase or diminish, so must the skilfull Husbandman alter his seasons,

sons, labours and instruments; for in stiffe Clayes, as are all the fruitfull Vales of this Kingdome (of which I haue named most part in a Chapter before) as also *Huntingtonshire, Bedfordshire, Cambridgeshire*, and many other of like nature, all manner of arable workes must be begun betimes in the yeare, and the plowes and instruments must be of large size and strong timber, and the labour great and painfull: so also in mixt soiles that are good and fruitfull, as *Northamptonshire, Hertfordshire*, most part of *Kent, Essex, Barkshire*, and Countreies of like nature, all arable toyles would begin at later seasons, and the plowes and instruments would be of middle size and indifferent timbers, and the labour somewhat lesse then the other: but the light sandy grounds which haue also a certaine naturall fruitfulness in them, as in *Norfolke, Suffolke*, most part of *Lincolnshire, Hampshire, Surry*, and Countreies of that nature, all arable toiles would begin at the latest seasons, and the plowes and instruments would be of the smallest and lightest size, and of the least timber, and the labour of all other is easiest.

Lastly, for the barren ynfruitfull earths) of which onely I haue written in this Booke) as is *Denonshire, Cornwall*, many parts of *Wales, Darbishire, Lancashire, Cheshire, Yorkeeshire*, and many other like or worse then they, the arable toiles would haue a fit season of the yeare, according to the temperatenesse of the yeare, which if it happen early, then you must begin your labours at later seasons, and for your plow and instruments, they must not keepe any certaine proportion, but be framed euer according to the ground, the stronger and stiffer ground hauing euer the strong and large plow with instruments of like kind, and the lighter earth, a
plow

plow and instruments of more easie substance; as for the labour, it must be such and no other then that which hath beene already declared in this booke.

And hence it comes that the office and duty of eue-
ry skillfull plowman or carter, is first to looke to the nature of the earth, next to the seasons of the yeare, then to the customes and fashions of the place wherein he liueth: which customes although they be held as second natures amongst vs, and that the best reasons of the best workemen commonly are, that thus I doe because thus they doe; yet would I wish no man to bind himselfe more strictly to custome, then the discourse of reason shall be his warrant, and as I would not haue him to preiudicate in his owne opinion, so I would not haue him too great a slave to other mens traditions, but standing vpon the ground of reason made good by experience, I would euer haue him profit in his owne judgement.

Now the further office and duty of the Husbandman, is with great care and diligence to respect in what sort or fashion to plow his ground; for although I haue in the former Chapters shewed how he shall lay his furrowes, what depth he shall plow them, and how hee shall be able to raise and gaine the greatest store of mould, yet is there also another consideration to bee had, no lesse profitable to the husbandman then any of the former, and that is how to lay your lands best for your owne profit and ease, as also the ease of your Cartell, which shall draw within your draught: as thus for instance: if your arable land shall lye against the side of any steepe hill (as for the most part all barren earths doe) if then you shall plow such land directly against the hill, beginning below, and so ascen-

The Carters
office.

ascending straight vp right and so downe againe, and vp againe; this very labour and toiling against the hill will breed such a bitter warisomnesse to the cattell, and such a discouragement, that you shall not be able to compasse one halfe part of your labour; besides, the danger of over-heating and sursetting of your Beasts, whence will spring many mortall diseases: Therefore when you shall plow any such ground, be sure ever to plow it side-waies ouer-thwart the hill, where your beasts may tread on the leuell ground, and neuer directly vp and downe, so shall the compasse and measure which you lay vpon the ground not be so soone wash away from the vpper part of the ground, because the furrowes not lying straight downe in an eauen descent, but turned crosse-wise vpward against the hill, it must necessarily hold the soile within it, and not let it wash away.

Of Cattell
for draught.

Againē it is the office of euery good Plow-man to know what Cattell are meetest for his draught; as whether Oxen, or Horse, or both Oxen and Horse: wherein is to be vnderstood, that although of all draughts whatsoener within this kingdome, there is none so good to plow withall both in respect of the strength, stability, indurance and fitnesse for labour, as the Oxen are, in whome there is seldome or neuer any losse, because whensoever his seruice faileth in the draught, his flesh will be of good price in the shambles; yet notwithstanding in this case a man must necessarily bind himselfe much to the custome of the Countrey, and fashion of his neighbours; for if you shall liue in a place where sell is scarce, and farte to be fetcht, as commonly it is in all barren Countreies, which for the most part are stony Champaines or cold Mountaines; and your neighbours as well for the speed of their iournies, as for the length keepe

keepe horse draughts: in this case you must also doe the like; or else you shall want their companies in your journey, which is both discomfort and disprofit if any mischance or casualty shall happen; or being inforced to drive your oxen as fast as they doe their horse, you shall not onely over-heat, tire, bruise, and spoile them; but also make them vitterly unfit either for feeding or labour: and therefore if your estate be meane, and that you haue no more but what necessity requires, then you shall sort your Plow or Teeme according to the fashion of your Country, and the vse of your neighbours: but if God haue blest you with plenty, then it shall not be amisse for you to haue euer an Ox-draught or two to till your Land; and a Horse-draught to doe all your forraigne and abroad businessses: so shall your worke at home euer goe constantly farward, and your outward necessary provisions neuer be wanting. Now for the mixture of Oxen and Horse together, it falleth out often times, that the Plowman must of force be provided with cattell of both kind, as if he happen to liue in a Rocky Countrey, where the steepnesse of the hills, and narrownesse of the waies will suffer neither Cart, Waine, nor Fumbrell to passe; in this case you shall keepe Oxen for the Plow to till the ground with, and Horses to carrie pots or hookes: the first to carry forth your measure, and the other to bring home your hay and come-harvest, your fuel and other provisions which are needfull for your family; as they doe both in *Cornwall*, and all other mountainous Countries, where Carts and Waines and such like draughts haue no possible passage.

Againe, it is the office and duty of euery good Plowman to know his seuerall labours for euery seuerall Moneth through the whole yeare, whereby no day nor

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houre may be mispent, but every time and season employ'd according as his nature requieth: as thus for example.

January.

In the moneth of *January*, the painfull Plowman, if he live in fertile and good soyles, as among rich, stiffe, simple clayes, he shall first plow vp his pease-earth, because it must lie to take baite before it be sowne; but if he live in fruitfull well mixt soyles, then in this moneth he shall begin to fallow the field he will lay to rest the yeare following; but if he live vpon hard barren earths (of which chiefly I write) then in this moneth he shall water his Meadows and Pasture grounds, and he shall draine and make dry his arable grounds, especially where he intends to sow Pease, Oares, or Barley, the seed-time following. Also he shall stub vp all such rough grounds as he intends to sow the yeare following, and shall meature and trimme vp your Garden moulds, you shall comfort with meature, sand, or lyme, or all three mixt together, the roots of all barren fruit trees: and also cut downe eail such timber, onely there will be losse in the barke, for the time is somewhat too early for it to rise. Lastly, you may transplant all sorts of Fruit-trees, the weather being open, and the ground easie: you may reare Calues, remove Bees, and for your owne health keepe your body warme, let good diet and wholesome be your Physitian, and rather with exercise then sauce, encrease your appetite.

February.

In the moneth of *February*, either set or sow all sorts of Beanes, Pease, and other Pulse, and the stiffer your ground is, the sooner begin your worke, prepare your garden mould, and make it easie and tender, prune and trimme all sorts of Fruit-trees from mosse, cankers, and all superfluous branches; plash your hedges, and lay

lay your quicksets close and intire together; plant Roses, Gooseberries, and any fruit that growes vpon little bushes; graft at the latter end of this moneth vpon young and tender stockes, but by all meanes ouersade not the stockes.

Lastly, for your health, take heed of cold; forbear meats that are slimy & flegmaticque, and if need require, either purge, bathe, or bleed, as Art shall direct you.

In the moneth of *March*, make an end of sowing March. of all sorts of small pulse, and beginne to sow Oates, Barley and Rye, which is called *March-Rye*; graft all sorts of fruit trees, and with young plants and tyens replenish your Nursery, cover the roots of all trees that are bared; and with fat earth lay them close and warme: if any tree doe grow barren, bore holes in the roote, and diuise hard wedges or pins of oake wood therein, and that will bring fruitfullnesse: transplant all sorts of Summer flowers, and giue new comfort of manure and earth to all carely ouerlandish flowers, especially to the *Crowne Emperiall*, *Tulippes*, *Hyacinth*, and *Narcissus*, of all shapes and colours, cut downe vnder wood for fuel and fencing, and looke well to your Ewes, for then is the principall time of yeanning: And lastly, bathe often, and bleed but vpon extremity, purge not without good counsell, and let your dyer be coole and temperate.

In the moneth of *April* finish vp all your Barley-April. seed, and begin to sow your Hempe and Flax: sow your garden seeds and plant all sorts of hearbs; finish grafting in the stockes, but begin your principall inauguration, for then the rinde is most plyant and gentle: open your hives, and giue Bees free liberty, leaue to succour them with food, and let them labour for their liuing.

Now cut downe all great Oake timber for now the
birke will rise, and be in season for the farmer. Now
scowre your ditches, and gather such manure as you
make in the streets and high waies into great hapes
together; lay your meadows, sleighte your barren
grounds, gather away stones, repaire your high waies,
set Oziers and Willowes, and cast up the banks and
muns, fill decayed fences.

Lastly for your health, either purge, bathe or bleed,
as you shall have occasion, and vse all wholesome re-
creation, for then moderate exercise in this moneth,
there is no better Physicke.

May

In the moneth of *May* sow Barley vpon all light
lands and burning grounds, so likewise is your Hemp
and Flax, and also all sorts of tender garden seeds, as
are Cucumbers, and Mellons, and all kind of sweete
smelling herbs and flowers. Follow your stiffe chyers.
Summer sowe your mixt corn and soyle all light and
loose hot lands: prepare all barren earth for Wheat and
Rye, Burne haire, Sow gorse or Furres, and roote out
Broome and Feare; begin to fold your sheepe, leade
forth manure, and bring home fuel and tending, weed
your winter corne, follow your common workes, and
put all sorts of cattell to grasse, either in pasture or tea-
cher: put your Mares to the Horse, let nothing be wan-
ting to furnish the Dary: and now put off all your win-
ter-fed fat cattell, for now they are scarcest and dearest,
put young Steares and dry Kine now to feed at fresh
grasse, and away with all Pleasid sheepe for the sweet-
nesse of grass: mutton will pull downe their prices.

Lastly for your health, vse drink that will coole and
purge the blood, and all other such physicall precepts,
as true Art shall prescribe you: But beware of Moun-
tebanks

Now

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Henry C. Adams mark p 25.1683

tebanke and old wifes tales, the latter hath no ground, and the other no truth but apparant colenage.

In the moneth of *June*, carrie sand, marle, lime, and measure of what kind so euer to your land; bring home your coales and other necessity: fuel fetch farre off, sheare early fat sheepe, sow all sorts of tender hearbs, cut ranke low medowes, make the first returne of your fat cattell, gather early Summer fruits, distill all sorts of Plants and hearbs whatsoeuer.

June.

And lastly for your health, vse much exercise, thin dyet, and chaste thoughts.

In the moneth of *July*, apply your hay-haruest, for a day, slackt is many pounds lost, chiefly when the weather is vnconstant, sheare all manner of field-sheepes Summer stir rich stiffe grounds, soile all mixt earths, and latter soile all loose hot sands, let hearbs you would preserve, now, winter to seed, cut off the stalkes of our-landish flowers, and couer the roots with new earth, so well mixt with measure as may be, sell all such Lambs as you feed for the Burcher, and still lead forth sand, marle, lyme and other measure; fence vp your Coppes, graze your elder vnder-woods, and bring home all your field-timber.

July.

And lastly for your health, abstaine from all Phisicke, bleed not, but vpon violent occasion, and neither meddle with Wine, Women, nor other wantonnesse.

In the moneth of *August*, apply your Corne-haruest, sheare downe your Wheat and Rye, mowe your Barley and Oats, and make the second returne of your fat sheepe and cattell; gather all your Summer greater fruit, plums, apples, and peares, make your Summer or sweet Perry and Cider; set slips and Syens of all sorts of Gilly-flowers, and other flowers, and transplant them

August.

that were set the spring before : & at the end of this moneth, begin to winter-rig all fruitfull soyles whatsoeuer ; geld your Lambes , carry meaneure from your Douecoates , and put your Swine to the early or first mast ; And lastly for your health, shun feasts and banquets, lee Phisicke alone , hate wine , and onely take delight in drinckes that are coole and temperate.

September.

In the moneth of *September*, reape your pease, beanes, and all other pulse , making a small end of your haruests ; now bestow vpon your wheat land your principall meaneure, and now sow your wheat and rye, both in rich, and in barren climats ; now put your swine to mast of all hands ; gather your winter fruites, and make sale of your wooll ; and other sommer commodities ; now put off those stockes of Bees, you meane to sell or take for your owne vse ; close thatche, and dawbde warme , all the suruiuing hiuts, and looke that no droanes , mice or other vermine be in or about them ; now thatch your stockes and reeces , thrash your seede Rye and Wheate ; and make an ende with your Cart of all forraigne iourneyes.

Lastly, for your health in this moneth vse Phyficke, but moderately , forbear fruits that are too pleasant or rotten, and as death shun ryot and surfeit.

October.

In the moneth of *October*, finish vp your wheat-feed, scowre ditches and ponds , plash and lay hedges and quickset, transplant, remoue, or set all manner of fruit trees, of what nature or quality soeuer ; make your winter cyder and perry, spare your priuate pastures , and cate vp the corne-fields and commons, and now make an ende of winter ridging , draw furrowes to draine and keepe dry your new sowne Corne, follow hard the making of your Malt, reare all such calves as shall fall, and

weane

weane those foales from your draught mares, which the Spring before were foaled: now sell all such sheepe as you will not winter, give euer folding, and separate Lambes from the Ewes which you purpose to keepe for your owne stocke.

Lastly, for your health refuse not any needfull Physicke at the hands of the learned Physitian, vse all moderate sports, for any thing now is good which reuiue the spirits.

In the moneth of *November* you may sowe either *November* wheate or rye in exceeding hot soyles, you may then remoue all sorts of fruite trees, and plant great trees, either for shelter or shadow: now cut downe all sorts of timber, for plowes, carts, axeltrees, naues, harrowes, & other husbandly offices, make now the last returne of your grasse fed cattle; bring your swine from the masse, and feed them for slaughter, reare what calves so euer fall, and breake vp all such hempe and flaxe as you intend to spin in the winter season.

Lastly, for your health, eate good whole some and strong meates, very well spiced and drest, free from rawnesse, drinke sweete Wines, and for digestion euer before cheese preferre good and moderate exercise.

In the moneth of *December*, put your liepe and *December* swine to the Pease Reekes, and fat them for the slaughter and market; now kill your small Porkes and large Bacons, lop hedges and trees, saw out your timber for building, and lay it to season, and if your land be exceeding stiffe, and rise vp in an extraordinary furrow, then in this moneth begiane to plow vp that ground

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whereon you meane to sow cleane beanes onely; now
 couer your dainty fruite trees all ouer with cantase; and
 hide all your best flowers from frosts and stormes with
 rotten old horse-litter; now draine all your cornd-
 fields, and as occasion shall serue, so water and keepe
 moyst your medowes; now become the Fowler with
 Peece, Nets and all manner of Engin, for in this Moneth
 no foule is out of season: Now fish for the Calpe, the
 Breame, Pyke, Tench, Barbell, Peale and Salmon.
 And lastly, for your health, eate meates that are hot and
 nourishing: drinke good wine that is neare sprighay
 and lusty; keepe thy body well clad, and thy house
 warme, forsake whatsoeuer is flegmaticke, and banish all
 care from thy heart, for nothing is now more vi-
 wholesome, then a troubled spirit.

Many other obseruations belong vnto the office of
 our skilfull Plowman or Farmer, but since they may be
 imagined too curious, too needlesse, or too tedious, I will
 stay my Penne with these already rehearsed, and
 thinke to haue written sufficiently, touching
 the application of grounds and office
 of the Plowman.

The end of Markham's farewell to Husbandry.

FINIS.